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A Preliminary Report
on the
Hymeniales of Connecticut

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Preface.

For several years, work along the line of investigations in fleshy and woody fungi has been carried on in many states, but little has ever been reported on Connecticut species. The establishment of the State Geological and Natural History Survey has made possible the contributing of some knowledge regarding fleshy and woody fungi of this state, and for this purpose the following preliminary report on the Hymeniales of Connecticut has been prepared.

The aim in the preparation of this report has not been to prepare original keys, monographs of different groups, or technical descriptions of species; the time since the organization of the Survey has been too short for such original work; but the aim has been to compile as far as possible a complete and accurate list of native species, together with notes regarding the characteristics of the genera. To make the report more comprehensible, technical terms have been avoided when it has been possible to do so without detriment to accuracy of description.

The collecting this year has been done largely in the vicinity of Mansfield, representing the northeastern section of the state, from which section two hundred and seventy-five species, included in fifty-five genera, are reported. Four hundred and twenty-five numbers were collected.

The writer fortunately has had access to several excellent collections previously made in various sections of the state, making possible a much more complete list of native species.

These collections are Mr. C. C. Hanmer's of East Hartford, representing the species found in central Connecticut; that of Dr. L. M. Underwood, Professor of Botany, Columbia University, New York City, whose collection made in Goshen represents the western Connecticut species; and that of Dr. G. P. Clinton, Botanist of the Connecticut Experiment Station at New Haven, representing the species of southwestern Connecticut.

From Mr. Hanmer's collection have been listed one hun-

dred and eighty species, included in fifty genera; from Dr. Underwood's, eighty species, in twenty-seven genera; and from Dr. Clinton's, thirty-four species, in twenty-two genera. The species found in the different sections of the state are the same in many cases, as is shown in the list appended. The total number of different species listed is three hundred and seventy-five, included in sixty-five different genera.

The mushrooms collected under the writer's supervision have been carefully dried, pressed, and preserved, forming the basis of a state herbarium of fleshy and woody fungi. The number of each specimen in this herbarium is inserted with the species reported, and thus the plant may be easily referred to. A card catalogue accompanies this herbarium.

The specimens in the other collections mentioned are also carefully and systematically preserved and are accessible: Mr. Hanmer's private collection at East Hartford, Dr. Underwood's in the cryptogamic herbarium of Columbia University, and Dr. Clinton's in the herbarium of the Connecticut Experiment Station.

Saccardo's "*Sylloge Fungorum*" has been adopted as a basis for nomenclature.

Every effort has been made to have correctly named all specimens collected, and men who have had long experience in determining species have very willingly aided in the work. Nearly all specimens have been submitted for accuracy of determination to Professor G. F. Atkinson of the Department of Botany, Cornell University, and to Dr. C. H. Peck, the New York State Botanist. Mr. C. H. Kauffman of the University of Michigan has very kindly identified many specimens of *Cortinarius*. Mr. I. W. Patterson, a student at the Connecticut Agricultural College, has assisted greatly in collecting, drying, pressing, and classifying specimens. The services of all of these gentlemen are greatly appreciated. We are indebted to the libraries of the Massachusetts Agricultural College and of the Connecticut Experiment Station for the loan of scientific literature.

The writer wishes especially to express his appreciation of the assistance of Dr. Charles Thom, Mycologist for the United States Department of Agriculture in dairy investigations at

the Storrs Experiment Station. Dr. Thom has aided much in the determination of species and in manuscript reading. Mr. C. C. Hanmer of East Hartford has also shown a deep interest in the work, and has heartily coöperated in every way possible.

The writer spent several weeks in the laboratories of Professors Atkinson, Peck, and Underwood, studying their type specimens and consulting the excellent American and foreign literature in their libraries.

The photographs for illustration were taken by the writer from specimens collected in Mansfield during the past summer, with the exception of Plates III and VI, which were loaned by the Connecticut Experiment Station, and Plates V, VII, XII, XXIV, XXV, and XXVI, loaned by Professor G. F. Atkinson, and for these additions the writer feels deeply grateful. The keys which are used have been largely compiled and revised to suit Connecticut genera.

As it has not been possible to prepare original monographs of any of the genera, this report is to be regarded as preliminary to further investigations. It would be highly desirable, in the event of the State Geological and Natural History Survey being continued for a number of years, if each year additions were made to the list already published, and some group or groups monographed. Reports of this nature would rapidly increase the literature of the Connecticut species of fleshy and woody fungi.

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HYMENIALES (*Hymenomycetinae*).

HYMENIUM OR MEMBRANE FUNGI.

The Hymeniales are members of a large class of Fungi whose reproductive bodies, or spores, arise from cells of definite shape, known as *basidia*. Because of these basidial cells these fungi are classed as BASIDIOMYCETES. These basidia are microscopic, and are usually more or less club-shaped, with lateral branches, known as *sterigmata*, extending from the larger end. Within the basidia two nuclei unite, and, upon subsequent division, each portion of the divided nucleus passes through the sterigmata into a developing basidiospore.

In Hymeniales, the *sterigmata* are usually four in number on each basidium, but in some species there may be two, six, or eight, each bearing at the tip the reproductive body or *spore*. These spores, upon germination, reproduce the particular species of fungi upon which they were borne.

In the higher orders of Basidiomycetes, as in Hymeniales, these basidia are borne upon a more or less conspicuous fruiting-body, or sporophore, which constitutes the visible portion of what is commonly spoken of as the mushroom, or fleshy fungus. The older writers did not include in Basidiomycetes the lower orders, such as Ustilaginales and Uredinales, because of the absence of the complex fruit-body, but careful research by later scientists has proved the development of the spore from the union of the nuclei of the basidia; this fact has seemed to some writers to justify their classification as lower forms of Basidiomycetes.

Because of the varying methods of nuclear fusion in the basidial cells, their subsequent division and subdivision, and the further development of the sporophore, or fruit-body, this class is sometimes divided into four sub-classes: HEMI-BASIDIOMYCETES, ÆCIDIOMYCETES, PROTOBASIDIOMYCETES, and EUBASIDIOMYCETES. In Hemibasidiomycetes are included such plants as the wheat and corn smuts, and in Æcidiumycetes the various rusts affecting agricultural crops. The Pro-

tobasidiomycetes and Eubasidiomycetes are considered the true Basidiomycetes; the first sub-class including Auriculariales (Auriculariineæ) and Tremellales (Tremellineæ); the second sub-class including Dacryomycetales (Dacryomycetineæ), Exobasidiales (Exobasidiineæ), and Hymeniales (Hymenomycetineæ). The Auriculariales include plants of a gelatinous or cartilaginous consistency, and are more or less ear-shaped; the Tremellales are jelly-like when moist, becoming hard, tough, and horny when dry. The first order of Eubasidiomycetes includes such plants as Guepinia; the second order includes azalea apples and other plants which are parasitic in the tissues of living plants, often deforming them; the third order, Hymeniales, constitutes the subject of this report.

The following key to the families of Hymeniales is adopted, with a few changes in the phraseology and in the system of notation, from Engler and Prantl's "Die Natürlichen Pflanzenfamilien."

- Plants mold-like, or spider-web-like, consisting of interwoven hyphæ; basidia clustered...HYPOCHNACEÆ
- Plants of firmly interwoven hyphæ; fruiting-surface consisting of basidia arranged in a palisade-like manner 1
- 1. Fruiting-surface smooth, only slightly roughened or wrinkled in some places..... 2
- Fruiting-surface uneven, with prominent elevations in the form of warts, spines, folds, tubes, etc..... 3
- 2. Fruit-body mostly of membranaceous, leathery, or woody consistency, funnel-form, capitate or branched THELEPHORACEÆ
- Plants mostly fleshy, rarely of a cartilaginous or leathery consistency, upright, club-shaped, capitate or branched CLAVARIACEÆ
- 3. Fruiting-surface with warts, interrupted folds, spines, or crested warts or plates.....HYDNACEÆ
- Fruiting-surface of other shapes..... 4
- 4. Fruiting-surface with regular tubes, or with folds or more or less leaf-like plates, which partly or completely unite by running together irregularly in a honey-combed manner, or are united into labyrinthiform passages POLYPORACEÆ

Fruiting-surface of prominent folds (gills), or with evident leaf-like expansions or plates, which are free or regularly forked, or are united by running together irregularly only at the base or point of attachment to the pileus.....AGARICACEÆ

AGARICACEÆ Fries. GILL-BEARING FUNGI.

This family contains by far the largest number of species of mushrooms. They are distinguished by a more or less flattened *pileus*, or *cap*, which may become convex, bell-shaped, or funnel-shaped; the *stem*, or *stipe*, is generally attached to the center, or nearly so, of the under side of the pileus; or the point of attachment may be at one side, when the pileus becomes shelving; the stem may be absent and the pileus attached directly to the mycelium (sessile).

The spore-bearing surface is usually on the under side of the pileus, and consists of radiating gills, prominent folds, or veins. Microscopical examination shows these fruiting-surfaces to be covered with peculiar reproductive cells, or basidia. From each of these basidia, one-celled spores, usually four in number, are produced.

CHARACTERISTICS OF MUSHROOMS.

In order that the various parts of a mushroom may be clearly understood, the following explanation is given.

The fleshy fruit-body of the Agaricaceæ is known as the *pileus*, or *cap*. Microscopical examination shows it to differ considerably from the fruit-bodies of the higher plants. There is no cellular tissue, but the structure is composed of interwoven hollow tubes, technically termed *hyphæ*. These *hyphæ* serve to conduct the food substances from the basal threads, which resemble the *hyphæ*, to the more highly specialized reproductive cells, the basidia. These hyphal threads which run through the center of the fruit-body, stem, cap, and gills, constitute what is technically known as the *trama*. When these hyphal threads approach the outer part of the gills, certain specialized cells arise which are spoken of as the *subhymenial layer*, and from these cells the reproductive cells, or basidia, develop. The basidia, placed closely side by side, con-

stitute the *hymenium*, from which the name Hymeniales is derived.

Certain other cells are frequently found among the basidia, which resemble them closely, but lack the sterigmata and spores; these are sterile basidia, termed *paraphyses*. Still other cells are found in the species of the Agaricaceæ, which project beyond the basidia. These cells are usually large, inflated, and in some species contain coloring matter which gives the gills characteristic colorings; these are the *cystidia*. These cystidia sometimes secrete moisture, which collects in drops on their tips.

The caps of the different species have characteristics which distinguish them from each other. Frequently the thick-walled threads which constitute the outer surface of the cap are filled with coloring matter which gives to species characteristic colorings. The green and red tints of *Russula*, the violet shades in many species of *Cortinarius*, and the distinctive colors of the different species of *Amanita* are due to this fact. These thick-walled, hyphal threads are termed the *cortex*, or *cuticle*. In many species, these threads excrete viscid or slimy substances which are peculiarities of species. In many species of *Cortinarius* it is necessary to know the viscosity of the specimen before it can be placed in its proper group. In some cases the outside, cortical layer of the hyphal threads ceases to grow as the cap increases in size; consequently it becomes torn into fine hairs, fibers, or scales of various sizes. The abundant scales of *Pholiota squarrosoides* arise from this source, as do the scales and tomentum on many other species.

The gills are the folds, or plates, on the lower surface of the cap, which radiate in various ways from the stem to the margin of the cap.

For accurate determination of genera and species, the technical terms descriptive of the gills, employed by most scientific writers, must be carefully studied and understood. These terms are so frequently met with in text-books that detailed definitions are hardly necessary in this report.

Upon the character and shape of the stem depend many of the distinguishing features in the identification of species.

In the larger number of Agarics, the stem is situated in the

center of the cap, giving these species an umbrella-like shape; but in some species the stem is attached at the side of the cap, when it is said to be *eccentric*. If the stem is entirely absent, the cap is *sessile*.

In some genera, the stem is fleshy and in others it is cartilaginous. The fleshy stems are usually more or less fibrous and somewhat spongy when broken, while the cartilaginous stems snap readily when bent, resembling somewhat the breaking of a pipstem. The outer surface of the stem is often covered with hairs or scales which arise from similar causes as those on the surface of the cap. The interior of stems varies much, being often solid throughout, but frequently hollow or stuffed with pithy substances. In shape, the stems vary in the different species; often they are large and bulbous at the base as in many species of *Amanita* and *Cortinarius*; sometimes they are cylindrical throughout, and again they taper decidedly, either toward the apex or toward the base. All of these characteristics need to be carefully considered in noting the distinct features in each specimen collected, for no two specimens are alike in every respect, even of the same species.

The *veil* and the resulting *volva*, or cup, and the *annulus*, or ring, are peculiar to certain Agarics, and need to be carefully observed, for the nature and location of these parts indicate frequently the edibility or non-edibility of the species.

In the young stage, the mushrooms exist as small knobs, or "buttons," of mycelium on the substratum. At this stage, the margin of the cap lies closely against the stem, and in some genera, as *Collybia* and *Mycena*, the margins simply expand, never having been united to the stem by any special structure. In other genera, like *Agaricus* or *Amanita*, the margins of the cap are closely united to the outer layer of the stem by a more or less compact net-work of fibers, termed the *veil*. This veil remains firm for a time, but after a while the expansion of the cap causes it to rupture. After the veil is ruptured, a part persists for a time on the cap, giving it various margins, and a part remains on the stem in the form of a ring, or, as it is technically termed, the *annulus*. The remnants on the cap and stem vary as to the length of time they remain. The more delicate the veil the more quickly it disappears, and it is

seldom found on certain species at maturity. On other species, the veil is well developed and persists both on the margin of the pileus and on the stipe for a considerable length of time. In many species of *Amanita*, *Agaricus*, and *Lepiota*, this persistent ring remains, while in some species of *Cortinarius* the delicate membrane quickly disappears. In *Lepiota procera* the ring is quite thick and persistent and easily movable on the stem. In some species of *Amanita*, this membrane makes a delicate curtain which completely covers the hymenial layers on the gills, and which drops around the stem, when ruptured from the margin of the cap. This veil is usually spoken of as the *partial veil*.

The genus *Amanita* possesses both a veil and a volva. A layer of fungus threads completely surrounds the fruit-body in the immature mushroom, forming what is known as the *volva*, or, as it is sometimes called, the *universal veil*. As the stem lengthens and the cap expands, this universal veil ruptures in various ways according to the species. In this rupturing, a more or less well defined "cup" is left at the base of the stem, differing in various species. In some cases, the universal veil becomes torn, and persists on the cortex of the cap in differently shaped "warts" of floccose scales. In *Amanita*, for example, the remnants of the ruptured outer veil are white, floccose, rather compact scales, which may disappear entirely in the mature plant, while in *Amanita solitaria*, the scales are found to be thick and conical, but easily rubbed off, and in *Amanita cæsarea*, frequently no indications of the ruptured veil can be found on the surface of the pileus.

The vegetative portion of the mushroom is seldom seen by the casual observer. A mass of hyphal threads composing the reproductive or fruiting body is the part noticed, the vegetative portions being hidden beneath decaying leaves, or ramifying within the cell structure of the host plant.

Key for the Analysis of Connecticut Genera of Agaricaceæ.

The Agaricaceæ are subdivided into five divisions: these divisions depending upon the color of the spores when deposited upon an opaque surface. After collecting, place the mushrooms, gills down, on opaque paper for a while, and an

abundance of spores will accumulate, making possible the following divisions:

1. *White Spores.* Spores pure white, with an occasional slight tinge of yellow or pink.
2. *Ochre Spores.* Spores yellow-brown or rust color.
3. *Rosy Spores.* Spores pink or some shade of pink.
4. *Brown Spores.* Spores dark brown or purple-brown.
5. *Black Spores.* Spores black, showing no tinge of brown or purple.

*Key to the White-Spored Group.**

Margin of the gills acute.....	1
Margin of the gills longitudinally split or grooved..	17
1. Mushrooms soon decaying or shrivelling.....	2
Mushrooms leathery, woody or corky, rigid when dry	15
2. Gills not attached to the stem; ring, volva or both	
present on the stem.....	3
Gills attached to the stem but not extending down it	
(adnate or adnexed).....	4
Gills attached to the stem and extending down it	
(decurrent)	10
3. Volva and ring present.....	<i>Amanita</i>
Volva present; ring absent.....	<i>Amanitopsis</i>
Volva absent; ring present.....	<i>Lepiota</i>
4. Volva absent; ring present.....	<i>Armillaria</i>
Volva and ring absent.....	5
5. Plants tough, membranaceous or leathery, drying	
quickly but reviving when moistened.....	<i>Marasmius</i>
Plants fleshy	6
6. Cap and gills very crisp and brittle.....	9
Cap and gills not crisp and brittle.....	7
7. Gills attached to the stem by a small, sudden curve	
(sinuate), ...	<i>Tricholoma</i>
Gills not sinuate.....	8
8. Margin of cap inrolled when young.....	<i>Collybia</i>
Margin of cap straight against the stem when young;	
cap slender, bell-shaped.....	<i>Mycena</i>

* Genera not reported from Connecticut are omitted from these keys.

9. Juice of plant milky.....some species of *Lactarius*
 Juice of plant not milky.....*Russula*
10. Stem attached at one side of the center of the cap
 (eccentric), or at its margin (lateral); growing
 on wood*Pleurotus*
 Stem central 11
11. Cap and gills very crisp and brittle; juice of plant
 milky some species of *Lactarius*
 Cap and gills waxy..... 12
 Cap more or less firm and fleshy..... 13
12. Plants parasitic on other fungi; gills blunt.....*Nyctalis*
 Plants not parasitic on other fungi; margin of gills
 thin, but thickened at union with cap....*Hygrophorus*
13. Gills thick and fold-like, margins blunt.....*Cantharellus*
 Gills thin, margins acute..... 14
14. Fresh stems breaking with clean, sharp ends...*Omphalia*
 Fresh stems breaking with fibrous, ragged ends..*Clitocybe*
15. Plants leathery in texture; gills extending down the
 stem (decurrent); plants reviving when moistened 16
 Plants woody or corky in texture; stem absent..*Lenzites*
16. Margin of gills toothed.....*Lentinus*
 Margin of gills not toothed.....*Panus*
17. Margin of gills split into two, revolute; growing
 on wood.....*Schizophyllum*
 Margin of gills somewhat crisped, gills resembling
 folds or wrinkles.....*Trogia*

Key to the Ochre-Spored Group.

- Gills not separating easily from the cap..... 1
 Gills separating easily from the cap.....*Paxillus*
1. Young plants covered by a cobwebby veil; ring frag-
 ile when present.....*Cortinarius*
 Plants not covered by a cobwebby veil..... 2
2. Ring present on the stem.....*Pholiota*
 Ring absent from the stem..... 3
3. Stem attached at one side of the cap or absent..*Crepidotus*
 Stem central..... 4
4. Gills dissolving into a mucilaginous condition at ma-
 turity; cap thin, soft and pliable.....*Bolbitius*
 Gills not dissolving at maturity..... 5

5. Gills with a small, sudden curve where joined to the stem (sinuate); cap usually covered with minute scales or fibers; stem fleshy, fibrous on the outside
Inocybe
Gills not sinuate..... 6
6. Stem fleshy, fibrous; cap fleshy; gills joined squarely to the stem (adnate), or running down stem (decurrent) *Flammula*
Stem brittle or cartilaginous..... 7
7. Margin of cap inrolled in young plant..... *Naucoria*
Margin of cap straight against the stem in young plant *Galera*

Key to the Rosy-Spored Group.

- Gills not attached to the stem (free)..... 1
Gills slightly attached to the stem (adnate or adnexed) 2
Gills attached and running down the stem (decurrent) 3
1. Ring absent; volva present..... *Volvaria*
Ring and volva absent..... *Pluteus*
2. Stem brittle; gills soon separating from stem... *Leptonia*
Stem not brittle; gills with a small, sudden curve near the stem (sinuate)..... *Entoloma*
3. Stem at one side of the cap, minute or absent.. *Claudopus*
Stem central 4
4. Stem fibrous; margin of cap inrolled when young.. *Clitopilus*
Stem brittle; cap with a central depression..... *Eccilia*

Key to the Brown-Spored Group.

- Gills attached to the stem (adnate, adnexed, or decurrent) 1
Gills not attached to the stem (free)..... *Agaricus*
1. Ring present; volva absent..... *Stropharia*
Ring and volva absent, but veil remains attached to the margin of the cap..... *Hypholoma*
Ring, volva and veil absent..... *Psilocybe*

Key to the Black-Spored Group.

- Gills more or less dissolving at maturity.....*Coprinus*
 Gills not dissolving at maturity..... 1
1. Substance of fruit-body waxy.....*Gomphidius*
 Substance of fruit-body fleshy and fibrous..... 2
2. Margin of cap striate; gills not variegated...*Psathyrella*
 Margin of cap not striate; gills somewhat variegated 3
3. Ring present on the stem.....*Anellaria*
 Ring absent, but veil often present.....*Panæolus*

AMANITA Pers.

A name given to some esculent fungi by Galen, perhaps from Mount Amanus.

The young plant in all species of *Amanita* is covered with a universal veil, as explained in the characteristics of mushrooms. As the cap expands, this veil ruptures, leaving a more or less well-defined margin on the stem, which is technically termed the volva.

The partial veil in the immature specimen extends from the stem to the margin of the pileus, enclosing the gills, and when ruptured falls around the stem in a veil-like ring. The persistency of this ring varies in the different species. The pileus is fleshy, convex, expanding with age. It separates easily from the stem, and differs from it considerably in substance. The stems are long and usually taper somewhat towards the top. The gills are not attached to the stem; spores white.

The Amanitas are nearly always found growing on the ground, usually in open woods, but are seldom found in open fields and pastures. They possess perhaps the most striking characteristics of any of the fleshy fungi, and when once learned they are seldom mistaken for other genera. The pure white form of *A. phalloides* is sure to attract the attention of even the most inexperienced collector, and its seeming purity appeals to persons seeking varieties adapted for table use. Nevertheless it contains the most violent of the poisons found in the whole group of fleshy fungi.

The colors of *Amanita* vary from pure white, through the various tints of orange, crimson, and scarlet to the dull red

and brown tints. Because of a few species which contain deadly poison, the whole group is viewed with suspicion by the amateur collector, yet many of them are listed as edible. However, it is unsafe to class any specimens of *Amanita* in the edible list, unless one is positively sure of the botanical characteristics of each individual specimen. It is better to adhere very closely to edible species which cannot be mistaken for non-edible, than to be less cautious. The amateur collector should make a careful botanical study of this group before venturing far in his search for edible fungi. The variations in each species should be carefully noted so there may be no mistaking their identity.

Frequently it is said that all poisonous forms possess a cup-like volva at the base of the stem, but this cannot be depended upon as a reliable means of identification, for often the universal veil ruptures in such a manner that few remnants are left on the stem.

In this locality the *Amanitas* are seldom found in any quantity before June 15th, and are very abundant from that date until the early autumn frosts. They seem especially plentiful in the chestnut sprout-lands of the state.

McIlvaine reports twenty-seven species as occurring in the United States. Eleven were collected in Tolland County during the past summer, and one in Hartford County.

Amanita bisporiger Atk. (two-spored).

Mansfield, Aug. (89).

A new species, the description of which will soon be published by Professor Atkinson.

Amanita candida Pk. (shining white).

South Windsor, *Hanmer*; Goshen, *Underwood*; Mansfield, July, Aug. (296). Edible (McI.).

Amanita cæsaræa Scop. (imperial).

Mansfield, July (79). Edible qualities uncertain.

Amanita flavo-conia Atk. (*flavus*, yellow; *conus*, cone; in allusion to color and shape of cap).

Mansfield, Aug. (87).

Amanita Frostiana Pk.

Mansfield, July (183). Poisonous.

Amanita muscaria Linn. (*musca*, a fly). Fly Amanita.

Goshen, *Underwood*; Mansfield, July, Aug. (276).

Poisonous. Plate I.

Amanita muscaria Linn., var. *alba* Pk. White Fly Amanita.

Mansfield, July, Aug. (92). Poisonous.

Amanita phalloides Fr. (phallus-like).

Goshen, *Underwood*; Mansfield, July, Aug. (171).

Poisonous.

Variable in color from white to dark brown. Plate II.

Amanita rubescens Fr. (becoming red).

Mansfield, Aug. (83). Edible (McI.).

Amanita strobiliformis Vitt. (having shape of a pine cone).

Rockville, *Hanmer*. Edible (Pk.).

Amanita verna Fr. (vernal).

Mansfield, July (166). Poisonous.

Resembles white form of *A. phalloides* closely, but differs in the manner of rupturing the universal veil, at base of stem.

Amanita velatipes Atk. (*velatus*, veiled; *pes*, foot; veiled stem).

Mansfield, July.

AMANITOPSIS Roz.

ἀμάριται, Amanita; *ὅψις*, appearance; resembling Amanita.

Like *Amanita*, the young plants of *Amanitopsis* are covered with a universal veil, which, when ruptured, leaves remnants upon the surface of the cap and at the base of the stem. The plants of this genus, therefore, possess a volva, or cup, at the base of the stem, but the ring on the upper part of the stem is absent. In this way they are distinguished from *Amanita*. Formerly these plants were included with the Amanitas, but the closely sheathing volva and the absence of a ring, place them in a separate genus. All species of *Amanitopsis* thus far determined are reported edible, but some species so closely resemble poisonous Amanitas that extremely careful examination should be made, to be certain that no trace of a ring is present on the stem.

A. vaginata is the most common species in this vicinity, and is usually found in open woods, growing among the leaf-



PLATE I. *Amanita muscaria*. Fly Amanita. (Reduced one-third.)

Cap blood-red at first, soon orange and becoming pale, whitening when old, covered with thick, angular warts; ring very soft, torn; stem bulbous at base and margined with concentric scales; spores white.



PLATE II. *Amanita phalloides*. Deadly Amanita. (Natural size.)

Cap white, yellowish-brown or blackish-brown, viscid in moist weather ; stem smooth or floccose, bulbous, with a distinct volva, or with a narrow margin on the bulb ; ring near top of stem, entire.

mold. Its characteristic sheathing volva and deeply striate pileus distinguish it from other species. *A. volvata* is also quite abundant.

Ten species of American *Amanitopsis* have been reported. Four are reported in Connecticut.

Amanitopsis farinosa Schw. (mealy).

Mansfield, July (78).

Amanitopsis strangulata (Fr.) Roz. (choked).

East Hartford, Rainbow, *Hanmer*.

Amanitopsis vaginata (Bull.) Roz. (having a sheath).

Mansfield, July, Aug. (147); East Hartford, *Hanmer*.

Amanitopsis vaginata (Bull.) Roz., var. *livida*. Pers. (livid).

Mansfield, July (88).

Amanitopsis volvata (Pk.) Sacc. (having a volva).

Mansfield, July, Aug. (259); Suffield, Sept.

LEPIOTA Fr.

λεπίς, a scale.

This genus is distinguished from *Amanita* and *Amanitopsis*, by the absence of a definite volva. These plants have a more or less persistent ring on the stem, but the volva is not present. The cap is generally scaly from the rupturing of the cuticle and the remains of the veil. The gills are not attached to the stem, but are joined to a cartilaginous collar which surrounds the stem. The substance of the stem is different from that of the cap, and the two are joined in a socket-like manner, so that the cap is easily separated from the stem. The ring in some species is easily movable on the stem when the specimens are mature. Many species are edible.

The Lepiotas are more frequently found in gardens, hotbeds and lawns, than in the woodlands. *L. procera* is sometimes found in thin chestnut sprout-land, or where the timber growth is young. The white spores, absent volva, scaly cap, and somewhat movable ring on the stem easily distinguish this species.

Lepiota Americana Pk.

East Hartford, *Hanmer*; New Haven, *Clinton*. Edible (Pk.).

- Lepiota asperula* Atk. (slightly rough).
East Hartford, *Hanmer*.
- Lepiota clypeolaria* Bull. (shield-shaped).
Manchester, *Hanmer*.
- Lepiota cristata* A. & S. (crested).
South Windsor, *Hanmer*; New Haven, *Clinton*; Mansfield, July (154). Edible (Pk.).
- Lepiota farinosa* Pk. (mealy).
South Windsor, *Hanmer*. Edible (Pk.).
- Lepiota granulosa* Batsch. (granular).
South Windsor, *Hanmer*.
- Lepiota illinita* Fr. (smeared over).
Mansfield, Aug. (231). Edible (McI.).
- Lepiota metulæspora* B. & Br. (having obelisk-shaped spores).
Mansfield, July, Aug. (214).
- Lepiota naucinoides* Pk.
East Hartford, *Hanmer*. Edible (Pk.).
- Lepiota procera* Scop. (tall). Parasol Mushroom.
East Hartford, *Hanmer*; Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, July, Aug. (95). Edible (McI.). Plate III.

ARMILLARIA Fr.

Armilla, a ring.

This is a small genus which closely resembles some species of *Amanita* and *Lepiota*, but differs by having the gills attached to the stem. The substance of the stem and pileus is also similar and continuous, while in the other genera the stem and cap easily separate. In *A. mellea* the cap is honey-colored or somewhat brown with dark scales. The inner veil is present and forms a distinct ring on the stem. Often the plants are found attached to the roots of living trees, and are considered harmful parasites. The plants are clustered, and the bases are connected by a rope-like strand of mycelium.

Armillaria mellea Vahl. (honey-colored).

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, July (164). Edible (Atk.). Plate IV.

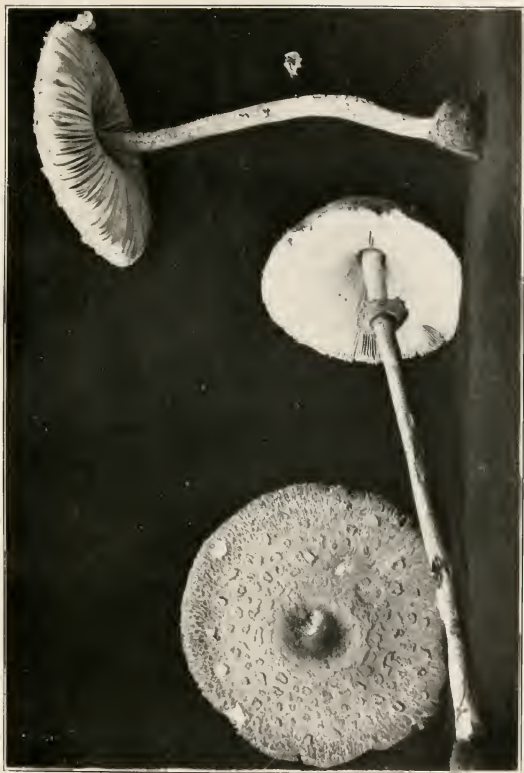


PLATE III. *Lepiota procera*, Parasol Mushroom. (Reduced.)
Cap variable in color, usually some shade of brown, covered with brown scales; stem variable in length, often tall, tubular; ring thick, firm, movable.



PLATE IV. *Armillaria mellea*. Honey-colored Armillaria. (Natural size.)
Cap covered with minute tufts of brown or blackish hairs, sometimes glabrous;
flesh white or whitish.

MARASMIUS Fr.

μαραίνω, to become completely dry.

The species of *Marasmius* are small plants which resemble *Mycena* and *Collybia*, but which differ from these groups in having properties which enable them to revive after drying, if moisture is applied; in many instances they resume their normal form. The cap is tough, thin, and more or less regular in shape. The gills are thin also and pliant. The stem is somewhat brittle and of a different substance from the pileus.

The members of this group are very numerous in the woods and fields, but possess little food value, because they are usually small. Several have a strong flavor of garlic. The species most plentiful during the past season were *M. oreades*, the "fairy-ring mushroom," *M. rotula* and *M. cohærens*. The plants are found on decaying leaves, rotten wood, and on the ground.

Marasmius cohærens (Fr.) Bres. (holding together).

Mansfield, July, Aug. (189).

Synonymous with *Mycena coharens* Fr., *Collybia lachnophylla* Berk., *Collybia spinulifera* Pk.

Marasmius elongatipes Pk. (long-stemmed).

Mansfield, June (24).

Marasmius oreades Fr. (mountain nymphs). Fairy-Ring Mushroom.

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, Aug. (210). Edible (Pk.).

Marasmius retiphyllus Atk. (*rete*, net; *phyllon*, leaf; referring to the netted gills).

Mansfield, July, Aug. (205).

Marasmius rotula (Scop.) Fr. (wheel).

Mansfield, June (3).

Marasmius scorodonius Fr. (garlic-smelling).

Mansfield, June, July; Suffield, Aug. (4). Used for flavoring (Cooke).

Marasmius semihirtipes Pk. (having stem half-hairy).

Mansfield, June, July (9).

Marasmius varicosus Fr. (varicose).

Mansfield, June, July (51).

TRICHOLOMA Fr.

θρίξ, a hair; λῶμα, a fringe.

The veil is wholly wanting in most species of *Tricholoma*, therefore the ring and volva on the stem are absent. In some few species a minute veil is manifest by cobwebby down on the margin of the pileus. In this genus the gills are joined to the stem, and are more or less strongly notched at the point of union. The pileus is fleshy, and similar in substance to the short, stout stem.

The species are usually found in moist woodland, growing on the ground among decaying leaves, but occasionally they occur in open pastures. Many are edible, but some few species are said to be poisonous.

Tricholoma albi-flavidum Pk. (yellow-white).

South Windsor, *Hanmer*; Mansfield, July (68).

Tricholoma album Schæff. (white).

Mansfield, July (85). Taste bitter (Pk.).

Tricholoma equestre Linn. (*equus*, knight).

South Windsor, *Hanmer*. Edible (Pk.).

Tricholoma personatum Fr. (masked).

Manchester, *Hanmer*. Edible (Atk.). Plate V.

Tricholoma portentosum Fr. (portentous).

East Hartford, *Hanmer*. Edible (McI.).

Tricholoma rutilans Schæff. (reddish).

South Windsor, *Hanmer*; Mansfield, Aug. (226).

Edible (McI.).

Tricholoma sejunctum Sow. (disjoined).

South Glastonbury, *Hanmer*.

Tricholoma transmutans Pk. (changing).

Rainbow, *Hanmer*. Edible (Pk.).

Tricholoma terreum Schæff. (earthen).

Rainbow, *Hanmer*. Edible (Pk.).

COLLYBIA Fr.

κόλλυβος, a coin.

The cap is fleshy and usually thin, and in the young plant the margin is inrolled, thus differing from *Mycena* which this genus resembles.



PLATE V. *Tricholoma personatum*. Masked Tricholoma.
(Natural size, often larger.)
Cap variable in color, generally pallid, tinged with lilac or
violet; stem thick, solid, somewhat bulbous.



PLATE VI. *Collybia radicata*. Rooted Collybia. (Reduced.)

Cap variable, usually brown with grayish shades, sometimes almost white, glutinous when moist; flesh thin, white, elastic; stem tapering upward; root extending deeply into earth, tapering, pointed.

The stem is rather brittle on the outside, but is frequently stuffed with fibers within. The ring and volva are wanting from the stem, and the gills are mostly attached to it.

This genus also strongly resembles *Marasmius*, but the plants lack the leathery consistency, and do not revive when once dried.

They are abundant throughout the entire season, growing on stumps, logs, decaying leaves, in soil, in woodlands and open fields.

Many of the fleshy species are desirable for food, and fortunately are abundant and have a long season of growth. Many of the more fleshy species are often infested with larvæ, and need careful examination before preparing for the table. None of the species as yet reported have been found poisonous.

Collybia acervata Fr. (heaped).

East Hartford, *Hanmer*; Mansfield, July (124). Edible (McI.).

Collybia butyracea Bull. (butter-like).

Mansfield, July (64).

Collybia confluens Pers. (flowing together).

Mansfield, July (82).

Collybia dryophila Bull. (oak-loving).

East Hartford, *Hanmer*; Mansfield, July (10).

Collybia esculenta Wulf. (esculent).

East Hartford, July, *Hanmer*. The best edible *Collybia* (Cooke).

Collybia lacerata Lasch. (torn).

East Hartford, *Hanmer*.

Collybia maculata A. & S. (spotted).

East Hartford, Sept., *Hanmer*.

Collybia platyphylla Fr. (πλατύς, broad; φύλλον, leaf; referring to the broad gills).

East Hartford, May, *Hanmer*; New Haven, *Clinton*; Mansfield, June (47). Edible (McI.).

Collybia radicata Relh. (rooted).

East Hartford, Aug., *Hanmer*; New Haven, *Clinton*; Mansfield, July (151). Edible (Curtis). Plate VI.

Collybia strictipes Pk. (short-stemmed).

Mansfield, June (53).

Collybia velutipes Curt. (having a velvety stem).

East Hartford, Sept., *Hammer*; Mansfield, May (345).

Collybia zonata Pk. (zoned).

Bolton, July, *Hammer*.

MYCENA Fr.

μύκης, a fungus.

This genus is composed mostly of delicate plants growing on wood, decaying stumps, among decaying leaves, and on the ground.

The cap is more or less conical, and in the immature plant the margin lies flat against the stem, in contrast with the incurved margin of *Collybia*. The stem is frequently long and slender, it snaps easily when bent, and is usually hollow. In some species a colored or watery juice exudes from the stem when it is broken. The gills are attached to the stem. Spores white.

Mycena occurs abundantly in woodlands and occasionally in grasslands. The plants promise little food value because of their small size and thin substance.

Their smallness makes the determination of species rather difficult. A few, however, have characteristic odors which aid in establishing their identity.

Mycena cyanothrix Atk. (blue-haired).

Mansfield, June (26). Plate VII.

Mycena epipterygia Scop. (*ἐπί*, upon; *πτερύγιον*, little wing).

Mansfield, July, Aug. (230).

Mycena galericulata Scop. (*galericulum*, a small peaked cap).

Mansfield, June (6).

Mycena hæmatopa Pers. (bloody-stemmed, referring to juice).

Mansfield, July, Aug. (65).

Mycena pelianthina Fr. (*πελιός*, livid; *ἄνθος*, flower).

Mansfield, Aug. (261).

Mycena vulgaris Pers. (common).

Mansfield, Aug. (5).



PLATE VII. *Mycena cyanothrix*. Blue-haired Mycena.
(Natural size.)
Cap viscid when young, blue, becoming pale and whitish in age,
and fuscous in center ; stem clothed with blue hairs at base.

LACTARIUS Fr.

Lac, milk; milk producing.

This group resembles *Russula* in some respects, but is easily distinguished by the abundance of milky juice which exudes from all parts of the plant when it is broken. The cap is rigid, somewhat sunken in the center, and often marked on its surface with concentric zones. The stem is stout, solid, and frequently marked with peculiar blotches. The gills are attached to the stem, and often extend down it in decurrent lines. The species are determined largely by their characteristic coloring, taste, and nature of milk. The colors vary greatly, and the taste in many species is peppery and acrid. These qualities, however, disappear in cooking, and many of the peppery species are classed among esculent mushrooms. The color of the milk in most species is white, but it often changes rapidly when exposed to the air. For example, in *L. theiogalus* the milk quickly changes to a sulphur yellow. In *L. indigo* the color of the milk is a deep indigo blue. These characteristics must be carefully noted when the fresh specimens are collected, otherwise their determination becomes difficult.

Many members of this group are desirable for their food value. The writer has enjoyed many meals of *L. volemus*, and *L. deliciosus*. *L. corrugis* is said to be equally desirable, but it does not occur in Mansfield in sufficient quantities to be of much value. They are remarkably free from larvæ of all kinds. Nearly all species grow on the ground and occur abundantly. During August of the past season, the woods in the vicinity of Mansfield contained immense quantities of *L. deceptivus*. *L. volemus* was also plentiful throughout the season.

Lactarius aquifluus Pk. (watery).

South Windsor, *Hanmer*. Edibility uncertain.

Lactarius blennius Fr. (slimy).

South Windsor, *Hanmer*. Edibility uncertain.

Lactarius camphoratus (Bull.) Fr. (having an odor of camphor).

East Hartford, South Windsor, *Hanmer*.

Lactarius chrysorrheus Fr. (flowing with gold).

Mansfield, Aug. (258).

Lactarius corrugis Pk. (wrinkled).

Rockville, *Hanmer*; Goshen, *Underwood*; Mansfield, Aug. (244).

Lactarius chelidonium Pk. (referring to the Celandine, a flowering plant with yellow acrid juice).

Goshen, *Underwood*; Mansfield.

Lactarius deceptivus Pk. (deceitful).

Goshen, *Underwood*; Mansfield, Aug. (319). Plate VIII.

Lactarius deliciosus (L.) Fr. (delicious).

Goshen, *Underwood*; Mansfield, July (298).

Lactarius fuliginosus Fr. (sooty).

Mansfield, Aug. (202).

Lactarius fumosus Pk. (smoky).

Mansfield, July (188).

Lactarius griseus Pk. (gray).

Mansfield, Aug. (198).

Lactarius hygrophoroides B. & C. (resembling *Hygrophorus*).

East Hartford, South Windsor, *Hanmer*.

Lactarius indigo (Schw.) Fr. (blue).

Goshen, *Underwood*; Mansfield, Aug. (321).

Lactarius luteolus Pk. (yellowish).

South Windsor, *Hanmer*.

Lactarius lignyotus Fr. (λιγνός, a smoke).

East Hartford, *Hanmer*. Edible (McI.).

Lactarius pallidus (Pers.) Fr. (pale).

Manchester, *Hanmer*. Edible (Cooke).

Lactarius pergamenus (Schw.) Fr. (*pergamena*, parchment).

South Windsor, *Hanmer*. Edible (Cooke).

Lactarius piperatus (Scop.) Fr. (peppery).

East Hartford, *Hanmer*; Mansfield, July (90). Plate IX.

Lactarius pyrogalus (Bull.) Fr. (πῦρ, fire; γάλα, milk).

Goshen, *Underwood*.

Lactarius subdulcis (Bull.) Fr. (sweetish).

Goshen, *Underwood*; Mansfield, July (41).



PLATE VIII. *Lactarius deceptivus*. Deceptive Lactarius. (Reduced one-third.)
Cap white or tinged with yellow, slightly tomentose or glabrous, except on the margin, which is at first inrolled and clothed with a dense, soft, woolly covering; gills broad, distant.



PLATE IX. *Lactarius piperatus*. Peppery *Lactarius*. (Reduced one-third.)
Cap white, funnel-shaped at maturity ; gills crowded ; milk white, unchangeable, very acrid.



PLATE X. *Lactarius volemus*. Orange brown *Lactarius* (Reduced one-third.)
Cap golden-tawny or brownish-orange, somewhat depressed at maturity, glabrous; gills close;
milk copious, white, slightly acrid.

Lactarius subpurpureus Pk. (purplish).

Goshen, *Underwood*.

Lactarius theiogalus (Bull.) Fr. (θεῖον, brimstone; γάλα, milk).

Goshen, *Underwood*; Mansfield, Aug. (315).

Lactarius torminosus (Schæff.) Fr. (producing gripes).

Goshen, *Underwood*.

Lactarius trivialis Fr. (common).

Goshen, *Underwood*; Mansfield, July (157).

Lactarius vellereus Fr. (fleecy).

Mansfield, July (91).

Lactarius volemus Fr. (*volema*, a large pear).

Goshen, *Underwood*; Mansfield, July (141). Edible (Fr.). Plate X.

RUSSULA Pers.

Russulus, reddish.

The variations in coloring in the species of *Russula* make their determination difficult, but the distinct generic characteristics seldom allow them to be confused with other genera. The cap is regular, with a more or less prominent depression, and somewhat rigid. The tissue constituting the cap and gills is composed of large cells which easily separate, giving this tissue a more or less mealy appearance when crushed. The stem is short, stout, brittle, very smooth without and spongy within. The veil is wholly lacking, so there are no indications of a ring or volva on the stem. The spores, when viewed under a microscope, are roughened or warty, and are white or of a yellowish tint when collected on a dark surface.

The species of *Russula* resemble closely *Lactarius*, but lack the milky juice. They occur abundantly during the summer, and until the severe frosts of autumn they are found in nearly every woodland. All species grow on the ground. Many species are reported edible, but the one considered the most desirable for food is *R. virescens*, the "green russula."

All edible species must be in a perfectly fresh condition when cooked, or the taste is strong and offensive. Many species have a characteristic taste and some a characteristic odor,

so their identity is revealed at once. When *R. fætens* is once known it is rarely forgotten, and the strong, acrid taste of *R. emetica* makes a lasting impression on the collector.

Russula aurata (With.) Fr. (*aurum*, gold).

Mansfield, Aug. (305).

Russula adusta (Pers.) Fr. (scorched).

Manchester, *Hanmer*.

Russula atropurpurea Pk. (dark purple).

South Windsor, *Hanmer*.

Russula brevipes Pk. (short-stemmed).

Bolton, *Hanmer*.

Russula citrina Gillet (citron-colored).

Mansfield, July (115).

Russula compacta Frost (close-grained).

South Windsor, *Hanmer*.

Russula depallens Fr. (becoming pallid).

Mansfield, July (72).

Russula flavida Pk. (yellow).

Rockville, *Hanmer*.

Russula fætens (Pers.) Fr. (stinking).

Mansfield, July, Aug. (172). Plate XI.

Russula furcata (Pers.) Fr. (forked).

Mansfield, July (141).

Russula lepida Fr. (elegant).

Mansfield, Aug. (313).

Russula roseipes (Secr.) Bres. (red-stemmed).

Mansfield, Aug. (328).

Russula sanguinea (Bull.) Fr. (blood-red).

Mansfield, July (77).

Russula virescens (Schæff.) Fr. (becoming green).

Mansfield, July (35). Edible (Pk.).

PLEUROTUS Fr.

πλευρά, a rib.

The pileus, or cap, is irregular, more or less fleshy, and in some species becomes membranaceous but never woody. The stem is fleshy and of the same consistency as the pileus; in many species it is not distinct from it. The stem is attached



PLATE XI. *Russula foetens*. Stinking Russula. (Reduced one-third.)
Cap dingy yellow, becoming pale, viscid in moist weather, margin deeply striate; stem stout, stuffed,
then hollow; taste acrid.



PLATE XII. *Pleurotus ostreatus*. Oyster Pleurotus. (Natural size, often larger.)
Cap white to dark gray, often yellowish at maturity; gills extending down the stem, connected by veins.

at one side of the center, at one edge of the pileus, or in some species it is lacking; the pileus being then attached directly to the substratum.

When the stem is present, the gills usually extend down it for a greater or less distance.

This group is usually found growing on wood either dead or alive. It contains many edible species. The well known oyster pleurotus and elm pleurotus are among the most desirable of these species. As in *Collybia*, these mushrooms are very frequently infested with larvæ.

Pleurotus lignatilis Fr. (woody).

Mansfield, July (81).

Pleurotus ostreatus Jacq. (oyster-like).

East Hartford, *Hanmer*; Mansfield, Aug. (217). Edible (Pk.). Plate XII.

Pleurotus petaloides Bull. (like a petal of a flower).

Mansfield, July (158). Edible (Cooke).

Pleurotus sapidus Kalchb. (savory).

South Windsor, *Hanmer*; Mansfield, Nov. (366). Edible (Pk.).

Pleurotus serotinus Schr. (late).

South Windsor, *Hanmer*.

Pleurotus ulmarius Bull. (pertaining to the elm).

East Hartford, *Hanmer*. Edible (Atk.).

NYCTALIS Fr.

νύξ, night; from inhabiting dark places.

This is a small genus of mushrooms, but interesting from the fact that the only American species is found living upon decaying mushrooms of other genera. Some of the species of *Russula* seem the most frequent host-plant. The cap is white or grayish white, fleshy; stem short; gills blunt, distinct, thick, and juicy.

Nyctalis asterophora Fr. (star-bearing; from the star-shaped bodies in the dust on the pileus).

South Windsor, *Hanmer*; Goshen, *Underwood*.

HYGROPHORUS Fr.

ὕγρός, moist; φορέω, to bear.

This genus includes many species which are highly colored and quickly attract the eye of the amateur collector, but the species, as a rule, are difficult for the beginner to determine.

The plants must be studied while fresh, for many distinguishing characters disappear upon drying. The pileus is rather fleshy and generally moist or viscid. The gills are, perhaps, the most distinguishing feature about this group of plants. They are very sharp or acute at the edges and are gradually thickened as they approach the pileus, making a distinct V-shaped appearance when a cross section is made. They also have a peculiar, watery appearance, and are of a waxy consistency. Usually the gills are attached to the stem and extend down it in decurrent lines, frequently branching considerably.

Hygrophorus caprinus (Scop.) Fr. (*capcr*, goat).

Mansfield, Aug. (274.)

Hygrophorus calophyllus Karst. (having beautiful leaves).

Rainbow, *Hanmer*.

Hygrophorus ceraceus (Wulf.) Fr. (waxy).

Rainbow, *Hanmer*; Mansfield, Aug. (254).

Hygrophorus chlorophanus Fr. (greenish yellow).

Mansfield, June (23).

Hygrophorus conicus (Scop.) Fr. (conical).

Mansfield, July (130). Plate XIII.

Hygrophorus coccineus (Schæff.) Fr. (scarlet).

Rainbow, *Hanmer*. Edible (Cooke, Pk.).

Hygrophorus erubescens Fr. (becoming red).

Rainbow, *Hanmer*. Edible (Cooke).

Hygrophorus Lauræ Morgan.

Manchester, *Hanmer*.

Hygrophorus miniatus Fr. (red).

Mansfield, June (35). Edible (Pk.).

Hygrophorus miniatus Fr. var. *lutescens* (yellowish).

Mansfield, July (109).

Hygrophorus nitidus B. & C. (shining).

Mansfield, July (175). Edible (McI.).



PLATE XIII. *Hygrophorus conicus*. Conical
Hygrophorus. (Natural size.)

Cap conical, acute, often lobed, yellow or tinged
with crimson.



PLATE XIV. *Cantharellus cibarius*. Chantarelle. (Natural size.)
Cap egg-yellow, slightly depressed, fleshy; gills thick, distant, more or less branching.



PLATE XV. *Cantharellus infundibuliformis*. Funnel-form *Cantharellus*. (Natural size)
Cap smoky-yellow at first, then pale yellow, floccose; gills thick, dichotomously branched; stem glabrous, yellow.

Hygrophorus pratensis (Pers.) Fr. (pertaining to a meadow).

Mansfield, July (108). Edible (Cooke).

Hygrophorus puniceus Fr. (purplish red).

East Windsor, *Hanmer*. Edible (Cooke).

Hygrophorus virgineus (Wulf.) Fr. (*virgo*, a virgin).

Rainbow, *Hanmer*. Edible (Cooke).

CANTHARELLUS Adanson.

Cantharus, a cup; from form of cap.

The members of this genus are more or less funnel-shaped at maturity, or at least quite deeply depressed in the center. The pileus is fleshy with a rather thick, blunt margin. The characteristic feature of the genus is the blunt gills, which are usually narrow, and in many species they resemble veins or wrinkles. They frequently branch and join by net-like veins. The number of Connecticut species is not large, and their characteristic features are so distinct that their identification is not as difficult as in many genera. Several are considered excellent for the table. *Cantharellus cibarius* is thought the most desirable species. It is widely distributed and is found abundantly.

Cantharellus brevipes Pk. (short-stemmed).

Rainbow, *Hanmer*. Edible (McL.).

Cantharellus cibarius Fr. (edible).

Mansfield, Aug. (218). Edible (Pk.). Plate XIV.

Cantharellus cinnabarinus Schw. (having the color of dragon's-blood).

Goshen, *Underwood*; Mansfield, July (232).

Cantharellus dichotomus Pk. (dividing by pairs).

East Hartford, *Hanmer*.

Cantharellus floccosus Schw. (woolly).

Mansfield, Aug. (224).

Cantharellus infundibuliformis (Scop.) Fr. (funnel-form).

Mansfield, Aug. (94). Plate XV.

Cantharellus lutescens Fr. (yellowish).

Manchester, *Hanmer*.

Cantharellus rosellus Pk. (rosy).

South Windsor, *Hammer*.

OMPHALIA Fr.

ὀμφαλός, navel.

These plants strongly resemble *Mycena* and *Collybia*, but differ from them by having a brittle stem, with the gills running down it, and by the pileus being more or less depressed in the center, frequently becoming funnel-form. They are usually found growing on wood, especially rotten stumps in swamps and damp localities. The most common species in eastern Connecticut is *O. campanella*, which occurs in immense numbers. The specimens photographed for illustration grew on a rotten stump in a swamp in Mansfield. This is the only species thus far reported in Connecticut.

Omphalia campanella Batsch. (bell-shaped).

East Hartford, *Hammer*; Mansfield, Aug. (134). Plate XVI.

CLITOCYBE Fr.

κλιτύς, slope; κυβή, head.

This group contains a large number of species whose individual characteristics vary so much that their identification is puzzling even to the experienced collector. It belongs to the white-spored series of Agaricaceæ, and in all species the ring and volva are absent. The pileus is generally fleshy, thicker in the center and narrowed toward the margin. The stem is similar to the pileus in consistency, is somewhat hollow, and is held by fibers on the outside so that it does not break easily when twisted or bent.

The gills are joined squarely to the stem (adnate), or in many species extend down the stem (decurrent). They occur usually growing on the ground, and frequently are found in large groups. *C. illudens* is often found grouped in large numbers about the bases of stumps of old trees, and *C. odora* is equally abundant in decaying leaves. This latter species is interesting because of its fragrance, which resembles that of water-lilies.



PLATE XVI. *Omphalia campanella*. Bell-shaped *Omphalia*. (Natural size.)
Cap thin, rusty yellow, striate; stem hollow, brown.



PLATE XVII. *Clitocybe odora*. Fragrant Clitocybe. (Natural size.)
Cap pale dingy green.



PLATE XVIII. *Clitocybe illudens*, Phosphorescent *Clitocybe*. (Reduced one-third.)
Cap fleshy, convex, smooth; deep yellow; gills unequally decurrent.



PLATE XIX. *Clitocybe infundibuliformis*. Funnel-form *Clitocybe*. (Reduced one-third.)
Cap pale-red, tinged with buff, sometimes becoming pale with age; gills close, thin, whitish; stem
usually tapering from base upward.

Clitocybe amethystina Bolt. (amethystine).

East Hartford, Manchester, *Hanmer*.

Clitocybe clavipes Pers. (club-footed).

East Hartford, *Hanmer*.

Clitocybe odora Bull. (fragrant).

Mansfield, Aug. (275). Plate XVII.

Clitocybe illudens Sch. (mocking).

Mansfield, July (159). Not edible (Atk.). Plate XVIII.

Clitocybe infundibuliformis Sch. (funnel-form).

Mansfield, Aug. (197). Plate XIX.

Clitocybe ochro-purpurea Berk. (ochreous purple).

Mansfield, Aug. (326).

Clitocybe trullissata Ellis. (scoop-shaped).

East Hartford, *Hanmer*.

Clitocybe laccata Scop. (made of lac, a resinous substance).

Mansfield, June (77).

Synonymous with *Laccaria laccata*.

LENZITES.

After Lenz, a German botanist.

In *Lenzites*, the substance of the pileus is leathery and corky. It is usually horizontal, more or less zoned, and resembles several genera belonging to the Polyporaceæ, with which it is commonly classed. The gills are leathery and tough, unequal, simple or branched. All species grow on wood.

Lenzites betulina (L.) Fr. (pertaining to the birch).

East Hartford, *Hanmer*; Goshen, *Underwood*; New Haven, *Clinton*.

Lenzites flaccida (Bull.) Fr. (flaccid).

East Hartford, *Hanmer*; Mansfield, Feb. (342).

Lenzites sepiaria Fr. (*sepces*, a fence or hedge).

= *Sesia hirsuta* (Schæff.) Murrill.

South Windsor, *Hanmer*; New Haven, *Clinton*.

Lenzites vialis Pk. (roadside).

= *Sesia pallido-fulva* (Berk.) Murrill.

Goshen, *Underwood*.

LENTINUS Fr.

Lentus, tough or pliant.

The pileus, or cap, of these plants is fleshy and leathery in consistency, becoming very tough and hard at maturity. The gills are of the same general character, and thin on the margins, which are toothed. The gills extend down the stem in more or less decurrent lines.

The stem in the different species is attached in various ways to the pileus. It may be central, or attached at one side of the center (eccentric), or it may be attached at one edge of the pileus (lateral), giving it a shelving appearance. Several species are exceedingly injurious to wood; the mycelium, or vegetative portion of the plant, inhabits the woody tissue, and in many different ways brings about destruction of the cell structure, causing decay. *L. lepideus* is usually found on railroad ties and is destructive to them.

Lentinus chrysopezus B. & C. (golden-cloaked).

Mansfield, June (52).

Lentinus Lecomtei Fr.

Mansfield, June (1).

Lentinus lepideus Fr. (scaly).

East Hartford, *Hanmer*; Mansfield, July (238).

Lentinus tigrinus (Bull.) Fr. (tiger-spotted).

East Hartford, *Hanmer*.

Lentinus vulpinus Fr. (hair^y like a fox).

Mansfield, July (237).

PANUS Fr.

The name of a fungus growing on trees, described by Pliny.

This group very closely resembles *Lentinus*, and by many authors the species are classed in that genus. The general characters are the same, but the margins of the gills are entire, thus differing from the toothed margins of the gills of *Lentinus*.

Panus farinaceus Schum. (mealy).

East Hartford, *Hanmer*.

Panus rudis Fr. (rough).

South Windsor, *Hanmer*.

Panus stipticus (Bull.) Fr. (astringent).

Mansfield, Aug. (220).

Panus salicinus Pk. (pertaining to the willow).

New Haven, *Clinton*.

Panus torulosus Fr. (*torulus*, a tuft of hair).

Mansfield, June (21).

SCHIZOPHYLLUM Fr.

σχίζω, to split; *φύλλον*, a leaf; referring to the split gills.

This group is separated easily from the other white-spored Agarics by the peculiar split gills, their dense, white, woolly covering, and general revolute appearance. Only one species is found in this locality. The appearance of the plant, especially when growing in abundance upon a log, is very attractive, and once learned it is rarely forgotten. The pileus is small, thin, and covered with a dense, hairy coat. It is variously attached to the substratum, generally at the side (lateral), or it may be attached at or near the center of the top. If collected during the winter months and placed under a bell-jar in a warm room, the pileus quickly expands.

Schizophyllum commune Fr. (common).

Mansfield, Oct. (203).

Synonymous with *Schizophyllum alneum* Schr.

TROGIA Fr.

After Trog, a Swiss botanist.

This small genus contains but one species reported from Connecticut. It is commonly found on decaying logs and branches, and is distinguished by the characteristic vein-like gills, which are somewhat curled.

Trogia crispa (Pers.) Fr. (crisped or curled).

Goshen, *Underwood*; Mansfield (225).

PAXILLUS Fr.

Paxillus, a small stake.

In *Paxillus*, the gills and pileus are easily separable, and the gills are so intricately connected by veins that many of the species closely resemble those in Polyporaceæ.

When the stem is present, the gills usually extend down it (decurrent), and the edges are entire and acute. The pileus is fleshy, inrolled in the immature specimens, and more or less viscid on the surface. The spores are ochre-colored. These plants are found singly or in tufts, growing on wood or on the ground.

Paxillus aurantiacus Ellis (orange-colored).

Mansfield, July (234).

Paxillus atro-tomentosus (Batsch) Fr. (having black down).

South Windsor, Rainbow, *Hanmer*.

Paxillus involutus (Batsch) Fr. (involute).

Mansfield, July (118). Edible.

Paxillus panuoides Fr.

East Hartford, *Hanmer*; Mansfield, July (200).

CORTINARIUS Fr.

Cortina, a veil.

This genus contains plants puzzling to the amateur collector, and difficult of determination even by the more experienced. Because of the peculiar nature of the plant it is necessary to have specimens in all stages of development, otherwise the identification is almost impossible. When young, the plants are covered with a cobwebby veil which is distinct from the cuticle of the cap, but in the more mature specimens this veil entirely disappears, except in some species where a fragile ring is perceptible upon the stem, or minute particles may be seen on the surface and margin of the pileus. The plants are mostly fleshy throughout, and are variously colored; many have beautiful violet tints, but the majority are yellow or brown.

The gills in the mature specimens are usually densely powdered with spores. The number of species is large, and many are found only in the fall, for they seem adapted to a cooler season of the year, although some are found during the early summer.

The specimens collected by Mr. C. C. Hanmer and the writer were sent to Mr. C. H. Kauffman of the Department of Botany, Ann Arbor, Michigan, for identification. Mr. Kauff-



PLATE XX *Cortinarius cinnamomeus* var. *semi-sanguineus*. Cinnamon-colored *Cortinarius* (Reduced one-third.)
 Cap cinnamon-colored, covered with fibrils when young, glabrous when mature.

man has made a special study of this genus, and his opinion regarding the accuracy of determination of species is valuable.

Cortinarius armillatus Fr. (ringed).

Rainbow, *Hanmer*.

Cortinarius polaris (Pers.) Fr. (*bolus*, a clod of red clay; allusion to color).

Mansfield, Aug. (308).

Cortinarius collinitus (Pers.) Fr. (besmeared; referring to glutinous surface).

Hartford, *Hanmer*; Mansfield, Aug. (184).

Cortinarius corrugatus Pk. (corrugated).

East Hartford, South Windsor, Rainbow, *Hanmer*;
Mansfield, Aug. (285).

Cortinarius cinnabarinus Fr. (having the color of dragon's blood).

Mansfield, July (136).

Cortinarius cinnamomeus (L.) Fr. (cinnamon-colored)
var. *semi-sanguineus*.

East Hartford, South Windsor, *Hanmer*; Mansfield,
July. Plate XX.

Cortinarius iodes B. & C. (violet).

East Hartford, *Hanmer*.

Cortinarius lilacinus Pk. (lilac-colored).

Mansfield, Aug. (178).

Cortinarius turbinatus (Bull.) Fr. (top-shaped).

Rockville, *Hanmer*.

PHOLIOTA Fr.

φολίς, a scale.

The members of the genus *Pholiota* are fleshy both in cap and stem, and the substance of the two is similar. The volva, or cup, is absent from the base of the stem, but a distinct ring is persistent near the top, and in immature specimens the gills are covered by the partial veil. The color of the spores serves to separate the genus from *Armillaria* of the white-spored group and *Stropharia* of the brown-spored group. The spores of *Pholiota* are a rusty-red with a yellow tinge when collected in quantity, and in some species are light red.

The gills are closely joined to the stem, and are often rusty-brown in mature specimens because of an accumulation of spores upon them. They resemble some of the species of *Cortinarius* of this same group, but the ring is stouter and more persistent. The species of *Cortinarius* have a fine cobweb-like veil surrounding the immature plants, which ruptures with growth, often leaving a delicate ring on the stem, which quickly disappears.

Pholiotas are found on tree trunks, old stumps, decaying wood of all kinds, as well as on the ground. Several are edible, and the writer has found *Pholiota squarrosoides* to have an especially fine flavor. Several species which have been tested have been found bitter and tough.

Pholiota æruginosa Pk. (*ærugo*, *verdigris*).

East Hartford, *Hanmer*.

Pholiota curvipes Fr. (curve-stemmed).

Mansfield, July (45).

Pholiota caperata Pers. (wrinkled).

East Hartford, *Hanmer*.

Pholiota præcox Pers. (early).

East Hartford, *Hanmer*; Mansfield, June (15).

Pholiota squarrosa Müll. (scurfy).

East Hartford, *Hanmer*; New Haven, *Clinton*. Edible (Curtis).

Pholiota squarrosoides Pk. (resembling the species *squarrosa*).

Mansfield, Aug. (269). Edible (McI.). Plate XXI.

CREPIDOTUS Fr.

κρηπίς, a boot.

The species of this genus are usually found growing on decaying stumps and fallen logs in woodland swamps and other damp, shady places. In their habit of growth and general appearance they strongly resemble *Pleurotus*, but are usually smaller and differ in the ochre color of the spores.

Crepidotus applanatus Pers. (made level).

Mansfield, July (146).

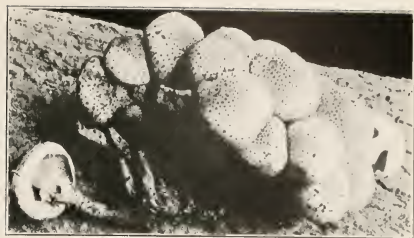


PLATE XXI. *Pholiota squarrosoides*. Viscid-scurfy *Pholiota*. (Natural size.)
 Cap fleshy, viscid when moist, densely covered with erect, tawny scales; gills white at first, then cinnamon color; ring thick, floccose; stem rough with thick scurfy scales.



PLATE XXII. *Crepidotus malachius*. (Natural size.)
Cap gray; stem short.

Crepidotus crocophyllus Berk. (κρόκος, saffron; φύλλον, leaf; referring to color of gills).

Mansfield, July (127).

Crepidotus malachius B. & C. (mallow-colored).

Mansfield, Aug. (96). Plate XXII.

Crepidotus dorsalus Pk. (*dorsum*, back).

Mansfield, July (126).

BOLBITIUS Fr.

βόλβιτον, dung; referring to place of growth.

This small genus is interesting because of a peculiarity of the gills, which dissolve as the plant reaches maturity, but do not deliquesce into a watery substance, as do the species of *Coprinus*. The cap is fragile, yellowish in color, and usually very mucilaginous in consistency, especially in moist weather.

As the generic name signifies, these plants usually grow on dung, but are sometimes found growing on decaying leaves. *B. variicolor* was found abundantly under shrubs which had been heavily manured the previous fall.

The spores are of a rusty-red color, and collect in large numbers upon the mature gills. But two species are reported.

Bolbitius fragilis (L.) Fr. (fragile).

East Hartford, *Hanmer*.

Bolbitius variicolor Atk. (variously colored).

Mansfield, May (22).

INOCYBE Fr.

ἴς, fiber; κυβή, head; fibrous cap.

The surface of the cap of the plants in this genus is more or less thickly coated with fine hairs or fibrils, the remnants of a universal veil. The gills are joined to the stem by a small, abrupt curve, but in some species they are joined squarely to the stem, and they may also extend down it, thus becoming decurrent. Only one number was identified during the past season.

Inocybe lanuginosa Bull. (downy).

Mansfield, July (133).

FLAMMULA Fr.

Flamma, a flame.

The generic name of this group signifies the brilliant coloring of the pileus of many of the species. The plants are fleshy throughout, and the gills are variously attached to the stem, but are never free from it. The spores are yellow with a brown tinge. The majority of these plants grow on wood, but a few are found on the ground.

Flammula alnicola Fr. (inhabiting alders).

East Hartford, *Hanmer*.

Flammula flavida Pers. (light yellow).

East Hartford, *Hanmer*.

Flammula fusus Batsch. (spindle-shaped).

Mansfield, July (196).

Flammula hybrida Fr. (hybrid).

South Windsor, *Hanmer*.

Flammula magna Pk. (large).

East Hartford, *Hanmer*.

NAUCORIA Fr.

Naucum, a nut-shell.

The Naucorias are small plants with a more or less fleshy cap, which is cone-shaped or convex when young, becoming expanded when old. The margin of the young cap is always rolled, which distinguishes the genus from *Galera*. The gills are usually free from the stem, but in some few species are attached, though they never run down it. *N. semi-orbicularis* is the only species yet reported, and grows abundantly on the lawns in this vicinity. The spores are of a brown rust color. In form *N. semi-orbicularis* closely resembles *Stropharia semiglobata* of the brown-spored group; but, aside from the difference in color of the spores, the ring on the stem of *S. semiglobata* distinguishes it.

Naucoria semi-orbicularis Bull. (half-round).

East Hartford, *Hanmer*; Mansfield, June. Edible (Atk.).

GALERA Fr.

Galcrus, a cap.

The cap, or pileus, is more or less membranaceous in character, and resembles *Mycena* of the white-spored group. When young the margin of the pileus lies flat against the stem, and is not incurved as in *Naucoria*. The stem is brittle, hollow, and fragile. Two of the few species were collected.

Galera hypnorum Batsch. (*hypnum*, moss).

Mansfield, *Thom.*

Galera tenera Schæff. (tender).

Mansfield, June (16).

VOLVARIA Fr.

Volva, a wrapper.

The plants of this genus somewhat resemble *Amanita* of the white-spored group. When the plants are young, they are covered by a universal veil which bursts as the plants develop, leaving a distinct, persistent volva, or cup, at the base of the stem. The stem separates easily from the pileus, and the gills are not attached to the stem. Growing on stumps commonly, sometimes in soil. Ring entirely absent.

Volvaria bombycina (Pers.) Fr. (silken).

East Hartford, *Hanmer*. Edible (Curtis).

PLUTEUS Fr.

Pluteus, a shield; from conical shape of the pileus.

The relationship between this genus and *Volvaria* is very marked. They resemble each other in all respects except the volva. The species are generally found growing on decaying logs or stumps of trees. *P. cervinus* is plentiful throughout the season, and somewhat resembles *Collybia platyphylla* in habit of growth and coloring; but in *P. cervinus* the gills are closer together, and the plant lacks the general coarseness which is characteristic of *C. platyphylla*.

P. cervinus is edible; but, like many of the fleshy forms, is frequently infested by larvæ, and needs careful examination before being prepared for the table. This species varies con-

siderably in general characters; some writers recognize several distinct varieties.

Pluteus admirabilis Pk. (admirable).

Mansfield, July (116). Edible (McI.).

Pluteus cervinus Schæff. (*cervus*, a deer).

Mansfield, July (20, 225). Edible (McI.). Plate XXIII.

Pluteus cervinus Schæff. var. *albipes* (white-stemmed).

South Windsor, *Hammer*.

Pluteus umbrosus Pers. (shady; from the dark color).

South Windsor, *Hammer*.

LEPTONIA Fr.

λεπτός, slender.

The Leptonias are generally found growing on the ground in dry pastures, but may be found in mossy swamps, and are distinguished by their slender habit of growth, thin pileus depressed in the center, margin inrolled when the plant is young, and the brittle character of the stem.

They belong to the rosy-spored group, and many species are brilliantly colored.

Leptonia formosa Fr. (handsome).

Mansfield, July (145).

ENTOLOMA Fr.

έντός, within; λῶμα, a fringe.

This genus is a suspicious one as regards poisonous characters, and the species should not be collected and eaten indiscriminately. The fungi are fleshy throughout, the volva and ring are absent from the stem, and in many other respects the species resemble *Tricholoma*. The color of the spores when collected in quantity serves, however, to identify the genus as belonging to the rosy-spored group. The spores when examined under a microscope are distinctly angular. The gills are attached to the stem by a sudden curve (sinuate), which fact separates this genus from the other rosy-spored genera. The determination of species is difficult even for the experienced



PLATE XXIII. *Pluteus cervinus*. Fawn-colored *Pluteus*. (Reduced one-third.)
Cap light gray, yellowish or grayish brown ; gills broad, somewhat crowded ; spores rose-colored.

collector, and careful notes need to be made regarding the color and viscosity of the cap, and other evanescent characters of the plant, before accurate determination is possible.

Entoloma grande Pk. (large).

Mansfield, July (162).

Entoloma Grayanum Pk.

Mansfield, July (161).

Entoloma rhodopolium Fr. (rosy-gray).

South Windsor, *Hanmer*.

Entoloma strictius Pk. (constricted).

South Windsor, *Hanmer*; Mansfield, July (58).

CLITOPILUS Fr.

κλίτης, declivity; πῖλος, cap; referring to the depression in cap.

The cap in *Clitopilus* is usually depressed, and in this respect resembles *Eccilia*, but the stem is less brittle, being more fleshy and fibrous in substance.

The species grow on the ground. McIlvaine says, "Some of the best of edible kinds are within this genus; a few are unpleasant raw, none poisonous." The attachment of the gills to the stem should be carefully noted, so that the genus be not confused with *Entoloma* of this same rosy-spored group. In the latter genus the gills are sinuate, and in *Clitopilus* they are more or less squarely joined to the stem or run down it.

Clitopilus abortivus B. & C. (abortive).

New Haven, *Clinton*.

Clitopilus micropus Pk. (short-stemmed).

East Hartford, *Hanmer*.

Clitopilus noveboracensis Pk. (New York *Clitopilus*) var. *tomentosipes* Pk. (downy-stemmed).

East Hartford, *Hanmer*.

Clitopilus noveboracensis Pk. var. *umbilicatus* Pk.

East Hartford, *Hanmer*.

Clitopilus Orcella Bull.

Mansfield, Aug. (216). Edible (McI.).

Clitopilus popinalis Fr. (belonging to a cook-shop; referring to its edible qualities).

Mansfield, Aug. (262).

Clitopilus tardus Pk. (late).

East Hartford, Jan., greenhouse, *Hanmer*.

Clitopilus unitinctus Pk. (one-colored).

East Hartford, *Hanmer*.

ECCILIA Fr.

ἔγκοιλος, hollowed out.

This small genus has characters similar to those of *Omphalia* of the white-spored group. The pileus is depressed in the center, and when young the margin is inrolled. The stem is brittle as in *Entoloma*, but the gills differ by extending down the stem (decurrent).

Eccilia carneo-grisea B. and Br. (grayish flesh-colored).

East Hartford, *Hanmer*.

AGARICUS Linn.

Ἀγαρικόν, a name for a fungus.

This genus is one of the most interesting in the Agaricaceæ because of the economic importance of many of the species. It contains some of the best known species, and their marked characters prevent their being confused with poisonous or harmful mushrooms. The entire plant is more or less fleshy, and the stem has a distinct ring; in some species it disappears as the plant matures, but in the young plant it is quite distinct, and is formed by the rupturing of the veil, which at first encloses the gills. The gills are free from the stem, which easily distinguishes the genus from *Stropharia*, and the abundance of brown spores which are formed on the under surface of the gills in mature plants, together with the presence of a ring upon the stem, prevent its confusion with other genera. The species strongly resemble some of the *Lepiotas* of the white-spored group. As far as known, no species are poisonous. *A. campestris* occurs in considerable quantities in the vicinity of Mansfield, and its long season of growth makes it a valuable species. It is one of the most familiar species, and nearly every one, even the most inexperienced collector, is familiar with "those toadstools which are pink or brown on the under side." This common field or pas-

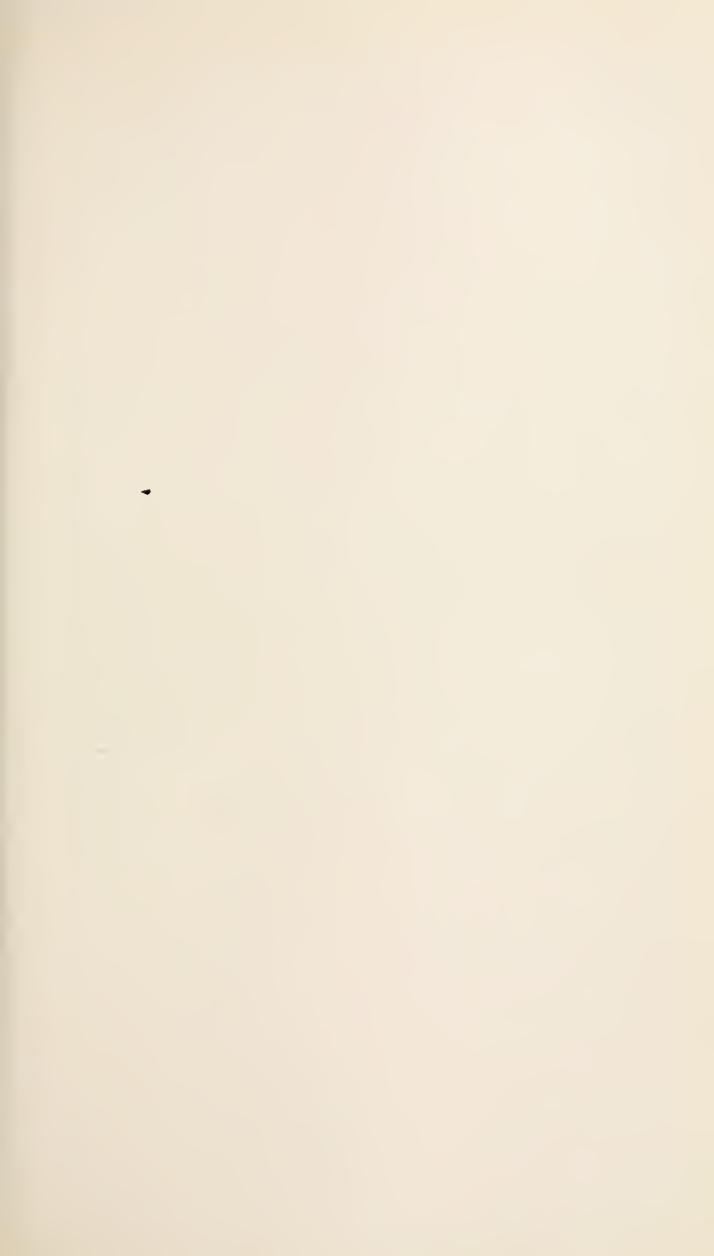




PLATE XXIV. *Agaricus campestris*. Field Mushroom Edible Mushroom.
(Natural size.)

Cap white, light or dark gray, smooth or silky floccose; gills at first pink, then dark brown; ring often disappearing in mature specimens; spores brown.

ture mushroom varies much in its size and coloring, but the principal distinguishing characters remain the same. This is the species ordinarily cultivated. All members of the genus grow on the ground, and by far the larger number grow in open, cultivated fields or meadows, but some are found in the woods.

Agaricus abruptus Pk. (abrupt, referring to the abrupt termination of stem).

Manchester, *Hanmer*; Mansfield, Aug. (201).

Agaricus arvensis Schæff. (belonging to cultivated ground). Plowed-land Mushroom. Edible (Pk.).

East Hartford, *Hanmer*.

Agaricus campestris L. (*campus*, a field).

New Haven, *Clinton*; Mansfield, Aug. Edible. Plate XXIV.

Agaricus placomyces Pk. (a flat fungus).

East Hartford, *Hanmer*. Edible (Miller).

Agaricus Rodmanii Pk.

East Hartford, *Hanmer*. Edible (Pk.).

STROPHARIA Fr.

στροφίον, a belt; referring to the ring.

This genus is separated from *Agaricus* by the attachment of the gills to the stem. When young the plants are covered by a partial veil, which leaves a distinct ring on the stem when it bursts. The cap and stem are fleshy, and the plants are considered edible by some writers and poisonous by others. Growing on the ground or on dung.

Stropharia semi-globata Batsch. (hemispherical).

Mansfield, June (13).

Stropharia stercoraria Fr. (pertaining to dung).

East Hartford, *Hanmer*.

HYPHOLOMA Fr.

ὑφός, a web; *λῶμα*, a fringe.

Hypholoma is quite easily separated from the other genera of the brown-spored group, by the veil which covers the gills

in the young specimens, the remnants of which remain attached to the margin of the cap in the matured plants. The whole plant has a fleshy consistency, and many species are edible. The plants are found more abundantly as winter approaches, and the writer has collected them during November after the most severe frosts. The plants grow singly or in groups, but more frequently they are thickly clustered on the surface of decaying logs or stumps.

Hypholoma appendiculatum Bull. (provided with a small appendage).

Mansfield, June (2).

Hypholoma fasciculare Huds. (*fasciculus*, a small bundle).
North Bloomfield, *Hanmer*.

Hypholoma perplexum Pk. (perplexing).
East Hartford, *Hanmer*.

Hypholoma sublateritium Schæff. (almost brick-colored).
Mansfield, Oct. Plate XXV.

Hypholoma rugocephalum Atk. (having a wrinkled head).
Rainbow, *Hanmer*.

PSILOCYBE Fr.

ψιλός, naked; κυβή, head.

This small genus is distinguished by the absence of the veil which occurs in the other genera of the brown-spored group. In the young plants, the margins of the pileus are inrolled. The stem is more cartilaginous than in other genera.

Psilocybe fœnisecii Pers. (*fœnisicia*, mown hay).
East Hartford, *Hanmer*.

COPRINUS Pers.

κόπρος, dung; referring to the place of growth.

The distinguishing characters of this genus are so evident that the plants cannot be confounded with other genera, even by the most inexperienced collector. The plants are common on lawns and on decaying manure, but are sometimes found on decaying stumps and logs. The caps spring up quickly and disappear just as rapidly. Some of the more fragile spe-



PLATE XXV. *Hypopholoma sublateritium*. Brick-top Hypopholoma. (Natural size, often larger.)
Cap brick-red or tawny ; stem floccose-scaly.



PLATE XXVI. *Coprinus comatus*. Shaggy-mane Mushroom.

(Natural size.)

Cap white, covered with shaggy scales, oblong when young, expanding when mature; gills at first white, then tinged with pink, finally dark purple or black; spores black. Plant deliquescent at maturity.

cies last for only a very short time. Several times during collecting trips, species of this genus have been gathered, and before reaching the laboratory they have almost entirely dissolved into a black fluid. This fluid is colored by the abundance of inky-black spores which are formed on the mature gills.

The plants vary from minute forms found on manure heaps to the "shaggy mane" which often grows to a considerable size. The species are usually clustered and occur in considerable quantities where found.

In July of the past summer, the writer found a very rotten maple stump with several large clumps of *C. atramentarius* growing at its base. Knocking the stump to pieces the interior was found crowded with well developed caps. These were cooked and were very tender and deliciously flavored. The plants mature so quickly, especially in moist weather, that it is necessary to keep a careful watch for them if they are to be gathered while fresh.

Coprinus atramentarius (Bull.) Fr. (inky).

Mansfield, July. Edible (Atk.).

Coprinus comatus Fr. (hairy).

East Hartford, *Hanmer*; New Haven, *Clinton*. Edible (Atk.). Plate XXVI.

Coprinus micaceus (Bull.) Fr. (granular).

Mansfield, Aug. (314). Edible (McI.).

Coprinus plicatilis Fr. (folded).

East Hartford, *Hanmer*.

GOMPHIDIUS Fr.

γόμφος, a peg.

Gomphidius includes a small number of species which possess marked characteristics. The color of the spores, however, is often misleading. Atkinson says, "The spores in some species are blackish, and for this reason the genus has been placed by many with the black-spored Agarics, while its true relationship is probably with the genus *Hygrophorus* or *Paxillus*."

When the plants are young, they are covered by a glutin-

nous, universal veil, which gives them a slimy appearance. The gills are soft and mucilaginous in consistency, and extend down the stem, prominently decurrent. But one species is reported.

Gomphidius rhodoxanthus Schw. (yellowish-red).

South Windsor, *Hammer*.

PSATHYRELLA Fr.

ψαθυρέας, fragile.

In *Psathyrella* the pileus is very thin, membranaceous and striate. The gills are not spotted as in *Panæolus* and *Anellaria*, and at maturity become black by the accumulation of spores upon their surface. *P. disseminata* was found in immense quantities in the greenhouses of A. N. Pierson at Cromwell, Connecticut.

Psathyrella disseminata Pers. (*dissemino*, to scatter; widely spread).

Cromwell, March.

ANELLARIA Karst.

Anellus, a little ring.

The relationship between this genus and *Panæolus* is very close, but in the latter genus the ring is wanting, while in *Anellaria* it is either persistently present or forms a zone around the stem.

Anellaria separata (L.) Karst. (distinct, separate).

East Hartford, *Hammer*.

PANÆOLUS Fr.

παναίολος, variegated.

This genus has distinct characters, and when once determined it is not easily confused with other genera. It lacks the dissolving qualities of *Coprinus* and the ringed stem of *Anellaria*, but possesses a veil which often remains on the margin of the pileus. McIlvaine says, "*Panæolus* in its entirety has a precise-looking membership. If the gills were cut from cardboard and fixed by machinery, they could not be more



PLATE XXVII. *Panacolus solidipes*. Solid-stemmed *Panacolus*. (Reduced one-third.)
Cap white; stem smooth, white, solid; spores very black.

correct. Some of the species are among the earliest arrivals at toadstool lawn parties, and some are the last to leave."

During the past season *P. retirugus* was exceedingly abundant in the flower beds on the campus at the Connecticut Agricultural College, and could be collected almost any day throughout the entire season. *P. solidipes* is an attractive looking plant. Its large size, pure white color, and symmetrical shape give it a pleasing individuality.

Panæolus campanulatus Linn. (bell-shape).

Mansfield, June (17).

Panæolus retirugus Fr. (*rete*, a net; *ruga*, a wrinkle).

Mansfield, June (14).

Panæolus solidipes Pk. (solid-stemmed).

Mansfield, July (229). Plate XXVII.

POLYPORACEÆ Fr. *Tube-bearing Fungi*.

The Polyporaceæ are in most cases easily distinguished from members of other families by the characteristic spore-bearing surface, which is composed of more or less regular, distinct tubes, with conspicuous or inconspicuous mouths.

The substance of the fruit-body in some genera is similar to the fruit-body of the Agaricaceæ, but the spores are produced within pores on the lower surface of the cap. In some genera these pore-bearing surfaces are variously convoluted and ridged so that they resemble the gill-bearing Agarics; in other genera they are more or less torn, somewhat resembling genera of Hydnaceæ. The family is a large one, and contains many edible species, especially in the *Boletus* group, but, as in many of the Agaricaceæ, they are frequently too badly infested by larvæ to be used for food.

The plants are found abundantly in all sections of the state, growing on trees either in a parasitic or saprophytic manner, and many, especially the fleshy forms, are found on the ground, in decaying leaves or other vegetable substances.

The plants vary much in their consistency, some being fleshy, others leathery or woody. Some are annuals, others are perennials, adding new layers of growth each year. In many species of *Fomes*, the new spore-bearing surface grows

directly over the growth of the previous year, and distinct zones of annual growth are thus formed.

Some members of this family form thin plates of spore-bearing bodies over the surface of logs, or decaying wood, and resemble the other species so slightly that they are frequently not recognized by the inexperienced collector as fungi of the same family. Examples of this manner of growth may be found in *Trametes*, and such plants are spoken of as *resupinate* forms, which means that the spore-bearing surface lies upon its back, the pores always pointing outward, then downward. No classification based upon the color of the spores has yet been made, but the divisions depend principally upon the texture of the cap and the arrangement of the pores.

Dr. W. A. Murrill of the New York Botanical Gardens, Bronx Park, New York City, has done much research work in this group, especially in the genera *Polyporus*, *Fomes*, and *Polystictus*, and the results of his investigations may be found in the publications of the Torrey Botanical Club. Dr. Murrill very kindly identified specimens collected by Mr. C. C. Hammer. As the nomenclature adopted in this report is that of Saccardo's "Sylloge Fungorum," the writer considered it better to follow a uniform system, but the nomenclature of Dr. Murrill is appended wherever his determination varies from the Saccardo list.

Key for the Analysis of Connecticut Genera of Polyporaceæ.

- Pores free from each other though standing closely side by side, and appearing as though joined. *Fistulina*
- Pores more or less closely united. 1
- 1. Pores easily separable from the cap. 2
- Pores not easily separable from the cap. 4
- 2. Cap covered with large scales. *Strobilomyces*
- Cap not covered with large scales. 3
- 3. Pores in radiating lines, tubes often adhering to cap
Boletinus
- Pores not in radiating lines. *Boletus*
- 4. Pores large at first, radiating from a central stem or lateral attachment; substance of cap tough and leathery *Favolus*

- Pores gill-like in concentric circles.....*Cyclomyces*
Pores glutinous.....*Glæoporus*
Pores small and round..... 5
5. Pores immersed in flesh of cap, of uneven depth.... 6
Pores not immersed in flesh of cap, not of uneven
depth 8
6. Pores in intricate and serpentine lines..... 7
Pores not in intricate and serpentine lines; substance
of the cap corky, cap often lying upon its back....
Trametes
7. Lines deep and distinct; plants corky.....*Dædalea*
Lines shallow; plants somewhat gelatinous.....*Merulius*
8. Substance of fruit-body in distinct annual layers
(stratose), woody.....*Fomes*
Substance of fruit-body not in distinct annual layers. 9
9. Plants membranaceous or leathery.....*Polystictus*
Plants fleshy and tough, often becoming woody....
Polyporus

FISTULINA Bull.

Fistula, a pipe.

This genus is a small one with but one species reported from Connecticut. Its characteristics are very marked, so the plants are not easily confused with other genera. The tubes, or pores, are separate or distinct, but are thickly crowded on the under side of the cap, having the appearance of being united.

F. hepatica, the beefsteak mushroom, is considered edible; but its strong, acid taste makes it objectionable to many. During the past season the plants were found abundantly on chestnut stumps in the vicinity of Mansfield. They are dark red in color, and when young are very soft and juicy. From a short lateral stem the fruiting-body expands into a broad, fleshy cap which becomes very moist and sticky in wet weather.

Fistulina hepatica Fr. (resembling the liver).

Mansfield, Aug. (257).

STROBILOMYCES Berk.

στρόβιλος, a pine cone; μύκη, a fungus.

This genus resembles *Boletus*, but is easily distinguished by the large, rough scales which cover the top of the cap and thickly clothe the stem, also by stronger adhesion between the pores and the cap. The plants receive their generic name from a fancied resemblance to a pine cone. They are inconspicuous in their habitat, and are frequently overlooked by a casual observer, because of the dark colored caps with many brown tints which closely resemble the colors of fallen leaves. *S. strobilaceus* was frequently found during the past season, being by no means rare in the vicinity of Mansfield.

Strobilomyces strobilaceus (Scop.) Berk. (cone-like).

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, Aug. (311).

BOLETINUS Kalchb.

A diminutive of *Boletus*.

This genus strongly resembles *Boletus*, but the pores do not as easily separate from the substance of the cap, and they are larger, more angular, and radiate from the stem. The plants are fleshy throughout. They are found growing on the ground in open fields, in swamps and woods. Some species occur quite abundantly in Mansfield. They are especially plentiful during rainy weather, and their season of growth is long. *B. porosus* was frequently collected from under apple trees growing on the campus of the Connecticut Agricultural College. Their appearance was attractive, and they have been pronounced edible, but a strong disagreeable odor repelled any desire to prepare them for food.

Boletinus pictus Pk. (painted).

Mansfield, Aug. (307).

Boletinus porosus (Berk.) Pk. (porous).

Mansfield, Aug. (213). Plate XXVIII.

BOLETUS Dill.

βωλίτης, a name given edible fungi.

Boletus comprises the largest number of fleshy species of any of the genera of Polyporaceæ. The generic characters



PLATE XXVIII. *Boletinus porosus*. Eccentric-stemmed Boletinus. (Reduced one-half.)
Cap fleshy, chestnut colored, viscid when moist; flesh large, angular.



PLATE XXIX. *Boletus Americanus*. American Boletus. (Reduced one-third.)
Cap thin, very viscid when moist, slightly tomentose on margin when young; flesh pale yellow, pinkish-grey
on exposure to air; tubes rather large, angular; stem slender.

are quite distinct, but the varying specific characters are so confusing that the plants are exceedingly difficult to classify. Dr. C. H. Peck has probably done more careful work on this genus than has any other American mycologist, and his illustrations and keys, published in "Reports of the New York State Botanist," are valuable. Anyone especially interested in mushrooms should have his reports, for his long experience with the fleshy and woody fungi has given him a standing foremost among mycology students. The writer considers it fortunate that he was enabled to have Dr. Peck examine the specimens collected for the Survey herbarium. No doubtful species have been reported.

The greater number of the plants in the genus grow on the ground, mostly in woods, and occur in large numbers, especially during damp weather. The caps and stems are fleshy, quickly decaying, and are frequently attacked by larvæ. They are eagerly devoured by cattle, and the writer spent an interesting hour feeding the different species to a herd of cattle. They eagerly devoured them all, even the intensely bitter *B. felleus*, at the same time positively refusing the peppery *Lactarius*.

Many of the species exhibit characteristic changes in coloring when the flesh is wounded, and these characters are of valuable assistance in their identification.

The genus is so large that it might easily furnish material for a complete report, therefore only the most striking characters are noted.

Boletus affinis Pk. (related).

Mansfield, July (260).

Boletus albellus Pk. (whitish).

South Windsor, *Hanmer*.

Boletus albus Pk. (white).

Goshen, *Underwood*.

Boletus Americanus Pk.

Goshen, *Underwood*; Mansfield July, Aug. (130, 50).

Plate XXIX.

Boletus æstivalis (Paul.) Fr. (summer).

Mansfield, July (279).

Boletus auriporus Pk. (golden-pored).

Goshen, *Underwood*; Mansfield, July, Aug. (252).

Boletus bicolor Pk. (two-colored).

Goshen, *Underwood*; Mansfield, July, Aug. (253).

Plate XXX.

Boletus brevipes Pk. (short-stemmed).

Goshen, *Underwood*.

Boletus calopus Fr. (beautiful-stemmed).

Goshen, *Underwood*; Mansfield, July (148).

Boletus castaneus Bull. (chestnut-colored).

Mansfield, July (155).

Boletus chrysenteron Fr. (having golden entrails).

Goshen, *Underwood*; Mansfield, July (54).

Boletus chrysenteron Fr. var. *albo-carneus* Pk. (whitish flesh-colored).

Manchester, *Hanmer*.

Boletus chrysenteron Fr. var. *deformans* Pk. (ill-shaped).

East Hartford, *Hanmer*.

Boletus chromapes Frost. (yellow-stemmed).

Mansfield, July (112). Plate XXXI.

Boletus cyanescens Bull. (bluish).

Goshen, *Underwood*; Mansfield, July (295).

Boletus edulis Bull. (edible).

Goshen, *Hanmer*; Mansfield, July (181).

Boletus eximius Pk. (select).

Rockville, Manchester, *Hanmer*; Mansfield, July, Aug. (177, 138).

Boletus felleus Bull. (bitter).

Goshen, *Underwood*; Mansfield, Aug. (300). Plate XXXII.

Boletus firmus Frost. (firm).

Mansfield, July (173).

Boletus flavidus Fr. (light yellowish).

Mansfield, July (117).

Boletus Frostii Russell.

Goshen, *Underwood*; Mansfield, July (163, 170).

Boletus gracilis Pk. (slender).

South Windsor, *Hanmer*; Mansfield, July (212).



PLATE XXX. *Boletus bicolor*. Two-colored Boletus. (Reduced one-third.)
Cap glabrous, dark-red; flesh yellow; not changing color where wounded; tubes bright-yellow, slowly changing to
blue where wounded, mouths small, angular; stem red, generally yellow at top.



PLATE XXXI. *Boletus chromipes*. Yellow-stemmed Boletus. (Reduced one-third.)

Cap pale-red, slightly tomentose; flesh white, unchangeable; tubes more or less depressed around the stem, white or whitish, becoming brown; stem rough-spotted, chrome-yellow at the base, both without and within.



PLATE XXXII. *Boletus felleus*. Bitter Boletus. (Reduced one-half.)
Cap glabrous, variable in color, grayish-brown, reddish-brown, chestnut or pale yellow, variable in size; flesh white;
taste bitter; tubes depressed around the stem, their mouths angular, white, becoming flesh-colored.



PLATE XXXIII. *Boletus piperatus*. Peppery Boletus. (Natural size.)

Cap glabrous, slightly viscid when moist, yellowish, cinnamon, or reddish-brown; flesh white or yellowish; taste acrid, peppery; tubes large, angular, reddish rust-color; stem slender, tawny-yellow, bright yellow at base.

Boletus granulatus L. (granulated).

Rainbow, South Windsor, *Hanmer*; Goshen, *Underwood*.

Boletus griseus Frost. (gray).

Mansfield, Aug. (304).

Boletus indecisus Pk. (undecided).

Mansfield, July (169).

Boletus luridus Schæff. (lurid).

Mansfield, June (37, 97).

Boletus miniato-olivaceus Frost. (reddish-olive).

Mansfield, July (137).

Boletus mutabilis Morgan. (changeable).

Mansfield, June (73).

Boletus ornatipes Pk. (ornate-stemmed).

Goshen, *Underwood*; Mansfield, July (143).

Boletus pallidus Frost. (pale).

Manchester, *Hanmer*.

Boletus parasiticus Bull. (parasitic).

Hartford, *Hanmer*.

Boletus Peckii Frost. (after C. H. Peck).

Manchester, *Hanmer*; Mansfield, Aug. (299).

Boletus piperatus Bull. (peppery).

Manchester, *Hanmer*; Mansfield, Aug. (215). Plate XXXIII.

Boletus punctipes Pk. (dotted-stemmed).

South Glastonbury, *Hanmer*.

Boletus purpureus Fr. (purple).

Mansfield, July, Aug. (123, 176).

Boletus Roxanæ Frost.

Mansfield, July (242).

Boletus Russellii Frost.

Mansfield, Aug. (277).

Boletus scaber Fr. (rough).

Mansfield, June (28).

Boletus scaber Fr. var. *alutaceus* (*aluta*, a soft leather).

Mansfield, Aug. (317).

Boletus scaber Fr. var. *areolatus* (*arcola*, a little area, referring to the cuticle cracking into small squares).

Manchester, *Hanmer*.

- Boletus scaber** Fr. var. *mutabilis* (changeable).
Mansfield, July, Aug. (132, 263).
- Boletus scaber** Fr. var. *niveus* (snowy).
South Windsor, *Hanmer*.
- Boletus scaber** Fr. var. *olivaceus* (olive-colored).
Mansfield, Aug. (373).
- Boletus scaber** Fr. var. *testaceus* (brick-colored).
Mansfield, June (27).
- Boletus speciosus** Frost. (handsome).
Manchester, *Hanmer*.
- Boletus striæpes** Secr. (having a striate stem).
Mansfield, July (195).
- Boletus subaureus** Pk. (almost golden).
South Windsor, Manchester, *Hanmer*.
- Boletus subglabripes** Pk. (having the stem somewhat glabrous).
Rockville, *Hanmer*; Mansfield, Aug. (327).
- Boletus subluteus** L. (yellowish).
East Hartford, *Hanmer*.
- Boletus subtomentosus** L. (somewhat downy).
Goshen, *Underwood*; Mansfield, June, July, Aug. (70, 325).
- Boletus subvelutipes** Pk. (having a somewhat velvety stem).
Mansfield, July (140).
- Boletus vermiculosus** Pk. (wormy).
Mansfield, July (293).
- Boletus vermiculosus** Pk. var. *Spraguei*.
Manchester, *Hanmer*.
- Boletus versipellis** Fr. (changing its skin or aspect).
Mansfield, July (306).

FAVOLUS Fr.

Favus, honeycomb.

The plants of this small genus are frequently found on decaying trees. The large-mouthed, radiating pores give the under surface of the cap a peculiar honeycombed appearance. The substance of the cap is tough and leathery in texture.

Favolus canadensis Klotz.

= **Hexagona alveolaris** (D. & C.) Murrill.

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield,
July (119).

CYCLOMYCES Kunz & Fr.

κύκλος, a circle; μύκης, fungus.

The characters of this genus are distinct from other Polyporaceæ. The cap is fleshy, leathery, or membranaceous, and upon the lower surface are the plate-like bodies which resemble the gills of Agaricaceæ, but which are composed of minute pores. These pore-bodies are borne in concentric circles, giving the lower surface a peculiar appearance. *C. Greenii* is the only species reported, and this is not uncommon in Connecticut.

Cyclomyces Greenii Berk.

= **Cycloporus Greenii** (Berk.) Murrill.

Goshen, *Underwood*; Mansfield, July (270).

GLÆOPORUS Mont.

γλοιός, gluten; πόρος, pore.

The plants of this genus have a leathery or woody cap and a trembling, gelatinous, spore-bearing surface which is somewhat elastic. The pores are round.

Glæoporus conchoides Mont. (shell-like).

East Hartford, *Hammer*.

TRAMETES Fr.

Trama; the generic distinction depending on the trama.

The characteristic difference between *Trametes* and other genera in this family is the unequal depth of the tubes, or pores, which are sunken into the flesh of the cap. It differs from *Dædalea* by having the pores more distinct and not arranged in serpentine lines. The plants grow on wood, and are woody or corky in texture, becoming hard with age.

Trametes cinnabarina (Jacq.) Fr. (having the color of dragon's-blood).

= *Pycnoporus cinnabarinus*.

East Hartford, *Hanmer*.

Trametes odora Fr. (scented).

East Hartford, *Hanmer*.

Trametes sepium Berk. (σήπω, to become rotten).

Poquonock, *Hanmer*.

DÆDALEA Pers.

δαιδάλεος, curiously wrought.

The plants belonging to this genus are found growing on wood, many being especially abundant upon decaying stumps. The peculiar, convoluted appearance of the under surface of the cap is due to the serpentine formation of the pore structure. These pores are rather deep, and the lines somewhat distant. The pore substance is not unlike the cap substance, both being corky in texture. *D. quercina* is perhaps the most common species and occurs abundantly on decaying stumps, especially oak. The distinct character of the pores always identifies it at a glance. The substance of the cap is very closely united with that of the fungus tissue within the wood, and the plant is removed from the host with difficulty. Some few species are attached to the feeding substance by the back of the cap (resupinate), that is, the back of the cap lies flat against the log, the pore surface pointing outward.

Dædalea confragosa Pers. (rough, rugged).

East Hartford, *Hanmer*; Goshen, *Underwood*; New Haven, *Clinton*. Plate XXXIV, at the right.

Mansfield, Feb. (361).

Dædalea quercina (L.) Pers. (pertaining to the oak).

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, Mar. (363). Plate XXXIV, at the left.

Dædalea unicolor (Bull.) Fr. (one-colored).

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, Mar. (360).

MERULIUS Fr.

Merula, a blackbird; probably from the color of the fungus.

Merulius is a small genus whose species are somewhat

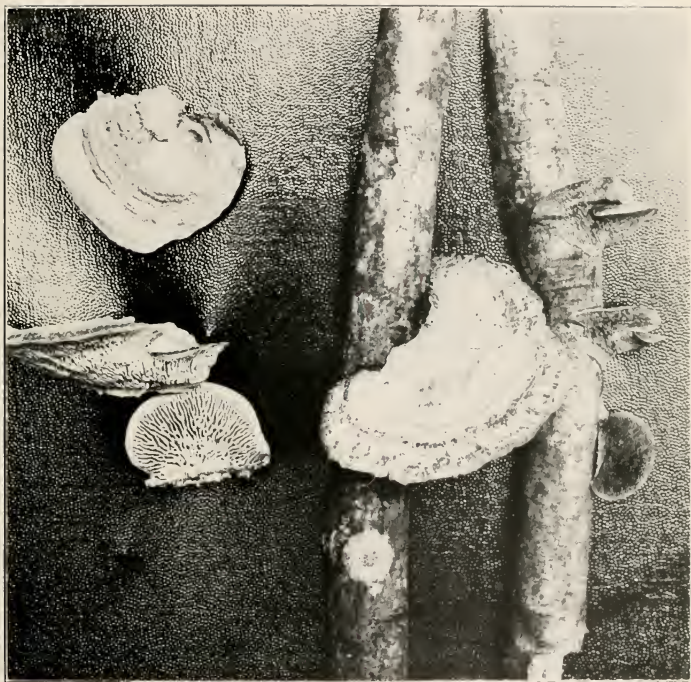


PLATE XXXIV. At the left, *Dædalea quercina*. Oak Dædalea.
At the right, *Dædalea confragosa*. Rough Dædalea.



PLATE XXXV. The upper specimen, *Fomes applanatus*.

Flattened Fomes. (Reduced one-half.)

The lower specimens, *Fomes fomentarius*. Smoky Fomes.
Colors of older growth dark gray, tinged with brown, recent
growth light gray; substance of cap woody.

gelatinous in substance. The pore surface consists of serpentine lines, but these lines are much more shallow than in *Dædalea*, appearing as small pits. The plants are usually attached to the substratum by the back of the cap (resupinate).

Merulius lachrymans Fr. (weeping; referring to the watery drops on the pileus).

East Hartford, *Hanmer*; New Haven, *Clinton*.

Merulius tremellosus Sch. (resembling *Tremella*).

New Haven, *Clinton*.

FOMES Fr.

Fomes, tinder.

The plants of this genus are separated from other genera of the Polyporaceæ by the hard and woody texture of the cap, even in the young plants. This cap is covered by a hard, rigid cuticle which is not zoned, but the plants are perennial growers, adding a new layer of tissue over that of the preceding year, making them distinctly *stratose*. In other words, the substance of the cap is composed of layers of mycelium and spore-bearing tissue. These layers may be seen if a cross section be made. As the new mycelial tissue spreads over the old, the latter dies, so that only the new growth is the living substance of the plant.

The species of *Fomes* are classed by the older writers in the genus *Polyporus*.

Fomes annosus (Fr.) Cooke. (aged).

East Hartford, *Hanmer*.

Fomes applanatus (Pers.) Fr. (*plano*, to level).

East Hartford, *Hanmer*; Mansfield, April. Plate XXXV; the upper specimen.

Fomes fomentarius (L.) Fr. (smoky).

= **Elfvingia fomentaria** (L.) Murrill.

Mansfield, March (350). Plate XXXV; the lower specimens.

Fomes igniarius (L.) Fr. (fiery).

= **Pyropolyporus igniarius** (L.) Murrill.

Goshen, *Underwood*; Mansfield, May (351).

Fomes lucidus (Leys.) Fr. (shining).

= *Ganoderma*, various species, Murrill.

East Hartford *Hanmer*; Mansfield, June; New Haven, *Clinton*.

Fomes roseus (A. & S.) Fr. (rose-colored).

East Hartford, *Hanmer*; Goshen, *Underwood*.

Fomes salicinus (Pers.) Fr. (pertaining to the willow).

= *Pyropolyporus conchatus* (Pers.) Murrill.

Goshen, *Underwood*.

POLYSTICTUS Fr.

πολύς, many; στικτός, punctate.

In this genus, the cap is leathery, membranaceous, rather spongy, and with a thin cuticle. The tubes run to an equal depth in the substance of the cap; this fact separates the genus from *Trametes*, which it strongly resembles. The substance of the cap is never fleshy or woody, and not stratose, thus making it unlike *Polyporus* or *Fomes*.

The pileus is usually zoned, frequently velvety, but may be rough with stiff hairs. The stem may be central, lateral, or absent. The plants are classed by the older writers with *Polyporus*.

Polystictus cinnamomeus Jacq. (cinnamon-colored).

= *Coltricia cinnamomea* (Jacq.) Murrill.

East Hartford, *Hanmer*; Goshen, *Underwood*.

Polystictus cinnabarinus (Jacq.) Fr. (having color of dragon's-blood).

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, May (352).

Polystictus conchifer Schw. (shell-bearing).

= *Poronidulus conchifer* (Schw.) Murrill.

East Hartford, *Hanmer*; New Haven, *Clinton*; Mansfield, May (356).

Polystictus hirsutus Fr. (hairy).

Goshen, *Underwood*; New Haven, *Clinton*; Mansfield, May (357).

Polystictus perennis (Linn.) Fr. (perennial).

= *Coltricia perennis* (Linn.) Murrill.

East Hartford, *Hanmer*.



PLATE XXXVI. *Polystictus versicolor*. Variegated Polystictus.
(Natural size)
Cap variegated with differently colored zones, leathery, thin, velvety ;
pores minute, round.

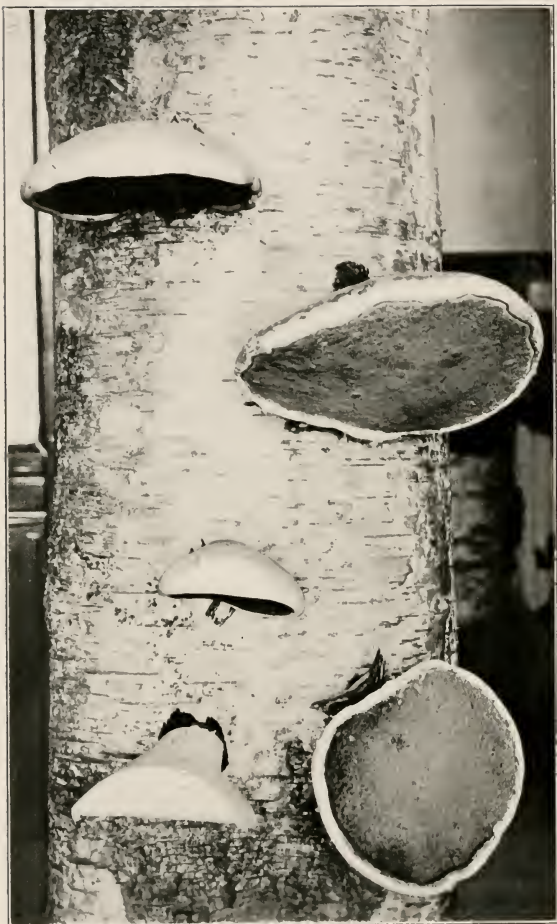


PLATE XXXVII. *Polyporus betulinus*. Birch Polyporus.
(Reduced one-half.)
Cap fleshy, then corky, hoof-shaped, zoneless, smooth ; pores minute.

Polystictus pergamenus Fr. (*pergamena*, parchment).

East Hartford, *Hanmer*; Mansfield, June (359).

Polystictus velutinus Fr. (velvety).

Goshen, *Underwood*.

Polystictus versicolor (Linn.) Fr. (changeable in color).

East Hartford, *Hanmer*; Goshen, *Underwood*; Mansfield, June (355); New Haven, *Clinton*. Plate XXXVI.

Polystictus zonatus Fr. (zoned).

Mansfield, Mar. (358).

POLYPORUS Fr.

πολύς, many; πόρος, pore.

These plants have a more or less fleshy texture when young, becoming harder with age. The genus is distinguished from *Fomes* by its lack of stratose layers of tubes within the cap. The pileus is not zoned, and it has a thicker flesh than the species of *Polystictus*.

The members of this genus are numerous, and are varied in their habit of growth. In some species the stem is central, but more often it is attached at one side of the cap (lateral), and sometimes it is wanting, the plants becoming sessile.

The species are commonly found growing on wood, in nearly all sections of the state, and are decidedly varied in their individual colors, shapes, and general habits of growth. *P. betulina* is so abundant upon grey birch trees that it is familiar to the most inexperienced collector.

Polyporus adustus (Willd.) Fr. (scorched).

= **Bjerkanderma adusta** Murrill.

East Hartford, *Hanmer*; Mansfield, May (353).

Polyporus Berkeleyi Fr.

= **Grifola Berkeleyi** (Fr.) Murrill.

East Hartford, *Hanmer*.

Polyporus betulinus Fr. (pertaining to the birch).

= **Piptoporus suberosus** (L.) Murrill.

East Hartford, *Hanmer*; New Haven, *Clinton*; Mansfield, Mar. (354). Plate XXXVII.

Polyporus brumalis (Pers.) Fr. (belonging to winter).

= **Polyporus Polyporus** (Retz.) Murrill.

East Hartford, *Hanmer*; Mansfield, May (19).

Polyporus cæsius (Schrad.) Fr. (bluish-gray).

Goshen, *Underwood*.

Polyporus chioneus Fr. (snow-white).

East Hartford, *Hanmer*.

Polyporus elegans (Bull.) Fr. (elegant).

East Hartford, *Hanmer*; Goshen, *Underwood*; Mansfield, July (36).

Polyporus fragrans Peck. (fragrant).

East Hartford, *Hanmer*.

Polyporus frondosus Fr. (leafy).

= **Grifola frondosa** (Dicks.) (S. F. Gray) Murrill.

Mansfield, Aug. (370).

Polyporus galactinus Berk. (milky-white).

East Hartford, *Hanmer*.

Polyporus gilvus Schw. (pale yellow).

= **Hapalopilus gilvus** (Schw.) Murrill.

East Hartford, *Hanmer*.

Polyporus hispidus (Bull.) Fr. (hispid).

= **Inonotus hirsutus** (Scop.) Murrill.

East Hartford, *Hanmer*; New Haven, *Clinton*; Mansfield, Apr. (368).

Polyporus leucomelas (Pers.) Fr. (λευκός, white; μέλας, black; allusion to change of color).

New Haven, *Clinton*; Mansfield, Aug. (337).

Polyporus rutilans (Pers.) Fr. (reddish).

= **Hapalopilus rutilans** (Pers.) Murrill.

East Hartford, *Hanmer*.

Polyporus Schweinitzii Fr.

= **Romellia sistotremoides** (A. & S.) Murrill.

East Hartford, *Hanmer*; Goshen, *Underwood*.

Polyporus semipileatus Peck. (half-capped).

East Hartford, *Hanmer*.

Polyporus sulphureus (Bull.) Fr. (sulphur-yellow).

= **Lætiporus speciosus** (Batarr.) Murrill.

Goshen, *Underwood*; Mansfield, July (369).

Polyporus squamosus (Huds.) Fr. (scaly).

East Hartford, *Hanmer*; Tolland, July (368).

HYDNACEÆ Fr. *Spine-bearing Fungi.*

The members of this family are easily recognized because of the distinct, spiny, spore-bearing surface of the cap; yet their varying generic and specific characters are puzzling to the amateur collector. The plants vary widely in their habits of growth; some are found growing in a shelving position from trunks of trees, thus resembling certain Polyporaceæ; others grow on the ground, closely resembling Agaricaceæ; still others attach themselves very closely to the bark of trees, in the peculiar way described in the family characteristic of Polyporaceæ, as resupinate. In these resupinate forms, only the spiny, spore-bearing surface is visible; the spines always growing directly towards the ground, which distinguishes the group from the Clavariaceæ in which the spiny projections are vertical.

Most of the species have the typical mushroom form; that is, they have a more or less expanded cap, with a central, well defined stem; but in some species the stem is wanting, and the caps are attached directly to the substratum (sessile).

A few species are edible, but as a rule the plants are tough and leathery in consistency.

There are several distinct genera in this family, but only two are reported.

Key for the analysis of Connecticut Genera of Hydnaceæ.

- Spines springing from folds or ridges which may branch irregularly; cap thin, spread out over the surface of the wood (resupinate).....*Irpex*
- Spines springing from an even surface, distinct at base; cap fleshy; stem central, attached at one side of the cap, or absent; plants often resupinate.....*Hydnum*

IRPEX Fr.

Irpex, a harrow.

The plants of this genus are all resupinate, that is, they spread themselves over logs, the teeth extending outward and downward. The spines are less sharply pointed and awl-shaped than in *Hydnum*, and are more or less connected at the

base into ridges, which somewhat resemble the convolutions of the fruiting-surface of *Dædalea*. The substance of the fruit-body is leathery.

Irpex cinnamomeus Fr. (cinnamon-colored).

Goshen, *Underwood*.

Irpex lacteus Fr. (milk-white).

East Hartford, *Hanmer*; Goshen, *Underwood*.

Irpex mollis B. & C. (soft).

Mansfield, May (347).

HYDNUM Linn.

ὕδνον, a kind of fungus.

In *Hydnum*, the fruiting-surface consists of distinct spines which are often somewhat branched at the tips. They vary greatly in form, and the species are difficult of determination because of a lack of technical American literature upon this group. They grow on the ground or upon wood, usually in woodlands. They are especially frequent as fall approaches, and many of the earth-growing species are overlooked by the collector because of their resemblance in color to fallen leaves. Several of the wood-growing plants are beautifully tufted into coral forms, thus resembling *Clavariaceæ*, but their spines always point downward, never upward as do the *Clavarias*.

Many species are listed as edible.

Hydnum adustum Schw. (scorched).

East Hartford, *Hanmer*; Goshen, *Underwood*; Mansfield, July, Aug. (165, 324).

Hydnum albidum Pk. (white).

Mansfield, Aug. (309).

Hydnum albo-nigrum Pk. (*albus*, white; *niger*, black; allusion to change of color).

South Windsor, *Hanmer*; Mansfield, July (219).

Hydnum aurantiacum A. & S. (orange-colored).

Ledyard, *Hanmer*; Mansfield, Aug. (338).

Hydnum caput-ursi Fr. (bear's head).

South Windsor, *Hanmer*. Edible (Curtis).

Hydnum compactum Pers. (compact).

Goshen, *Underwood*.



PLATE XXXVIII. *Hydnum septentrionale*. Northern Hydnum.
(Reduced one-half.)

Caps white, fleshy-fibrous, imbricated ; spines very crowded, slender, equal.

Hydnum coralloides (coral-like).

East Hartford, *Hanmer*. Edible (Curtis).

Hydnum ferrugineum (Scop.) Fr. (rust-colored).

Rockville, *Hanmer*. Edible (McI.).

Hydnum graveolens Del. (strong-smelling).

Ledyard, *Hanmer*.

Hydnum imbricatum L. (imbricated).

North Glastonbury, *Hanmer*; Mansfield, Aug. (45).

Edible (Curtis).

Hydnum ochraceum Pers. (ochre-yellow).

Poquonock, *Hanmer*.

Hydnum repandum L. (bent backward).

East Hartford, *Hanmer*; Mansfield, July (239). Edible (Curtis).

Hydnum rufescens Pers. (reddish).

Mansfield, July (160). Edible (Curtis).

Hydnum scabrosum Fr. (rough).

Mansfield, Aug. (231).

Hydnum scrobiculatum Fr. (*scrobiculus*, a little trench; from the slightly pitted cap).

Rainbow, *Hanmer*.

Hydnum septentrionale Fr. (northern).

South Windsor, *Hanmer*; Mansfield, Aug. Plate XXXVIII.

Hydnum squamosum Schæff. (scaly).

Mansfield, July (247).

Hydnum umbilicatum Pk. (umbilicate).

Rainbow, *Hanmer*.

Hydnum vellereum Pk. (fleecey).

Mansfield, Aug. (310).

Hydnum zonatum Batsch. (zoned).

Mansfield, June (100).

THELEPHORACEÆ Pers.

This family contains plants similar in appearance to other families described, but they are generally distinguished by a perfectly plane fruiting-surface. In some few genera, however, this surface may be radiately wrinkled, or velvety from minutely projecting cystidia. The reproductive spores are borne as in other families.

Key for the analysis of Connecticut Genera of Thelephoraceæ.

- Spores colored, substance of plant leathery, dry and fibrous, fruiting-surface wrinkled.....*Thelephora*
 Spores colorless..... 1
1. Fruiting-surface minutely velvety, with rigid, smooth, colored, projecting cystidia....*Hymenochæte*
 Fruiting-surface smooth..... 2
2. Plants funnel-shaped or cup-shaped..... 3
 Plants not funnel-shaped or cup-shaped..... 4
3. Plants large, funnel-shaped, substance fleshy or membranaceous*Craterellus*
 Plants small, cup-shaped, substance thin.....*Cyphella*
4. Surface of cap velvety, fruiting-surface not cracked in drying.....*Stereum*
 Plants smooth throughout, waxy, polished, entirely resupinate, fruiting-surface cracked when dry..
Corticium

THELEPHORA Ehrh.

θηλή, a teat; φέρω, to bear.

In this genus, the substance of the fruit-body is dry and fibrous, somewhat leathery in texture, and lacks a distinct cuticle. The fruiting-surface is slightly wrinkled and bears colored, minutely warted spores. Many species are soft and elastic but never gelatinous.

Thelephora anthocephala (ἄνθος, flower; κεφαλή, head).

Goshen, *Underwood*.

Thelephora intybacea Pers. (resembling chicory).

Hartford, *Hanmer*.

Thelephora pallida Pers. (pale).

Waterbury, *Hanmer*.

Thelephora palmata (Scop.) Fr. (palmate).

Glastonbury, *Hanmer*.

Thelephora radiata Fr. (radiated).

East Hartford, *Hanmer*.

Thelephora terrestris Ehrh. (pertaining to the earth).

East Hartford, South Windsor, *Hanmer*.



PLATE XXXIX. *Craterellus cornucopioides*. Cornucopia Craterellus. (Natural size.)

Cap dark gray or brown, becoming black with age, funnel-shaped, mouth wavy, split or in folds; flesh thin, brittle or tough; fruiting surface slightly uneven.

HYMENOCHÆTE Lev.

ὑμήν, membrane; χαίρη, a bristle.

In Hymenochæte, the cap may be attached to the substratum by a central stem, at one side, or upon its back (resupinate). The distinguishing character of the genus is the velvety or bristly appearance of the fruiting-surface, due to smooth, projecting, thick-walled cells (cystidia or setæ).

Only one species was collected during the past season, but this was found abundantly upon decaying chestnut stumps.

Hymenochæte rubiginosa (Schr.) Lev. (rusty).

Mansfield, May (344).

CRATERELLUS Fr.

Crater, a bowl.

Craterellus very closely resembles *Cantharellus* of the Agaricaceæ family, but is distinguished by a smooth fruiting-surface, while in *Cantharellus* the fruiting-surface is composed of thick blunt gills. The plants are very common in the autumn. They are funnel-shaped, and of a fleshy, waxy, or membranaceous consistency.

Craterellus cantharellus (Schw.) Fr. (a small vase).

New Haven, *Clinton*.

Craterellus conucopioides (L.) Pers. (resembling a horn of plenty).

Mansfield, Aug. (245). Plate XXXIX.

CYPHELLA Fr.

κύφελλον, an ear-like depression.

The plants of this genus are small, cup-like, and resemble *Peziza* of the Discomycetes. Some species are similar to *Corticium*, but are distinguished by being attached to the substratum at a central point, and not by the whole sterile surface. Then, too, the fruiting-surface has a tendency to turn downward away from the light, while in *Corticium* it turns towards the light.

Cyphella muscigena (Pers.) Fr. (growing on moss).

South Windsor, *Hanmer*.

STEREUM Pers.

στερεός, solid, hard.

Stereum is distinguished by the smooth, plane, fruiting-surface and the velvety or hairy upper surface of the cap.

In some species the plants have a well-defined central stem, in others the side of the cap is attached to the substratum, while in still others the cap lies upon its back (resupinate).

Stereum complicatum Fr. (complicated).

Mansfield, July (364).

Stereum fasciatum Schw. (bundled).

East Hartford, *Hanmer*.

Stereum gausapatum Fr. (*gausapa*, a shaggy woolen cloth).

East Hartford, *Hanmer*.

Stereum hirsutum (W.) Fr. (hairy).

New Haven, *Clinton*.

Stereum sericeum Schw. (silky).

Bolton, *Hanmer*; Mansfield, Aug. (365).

CORTICIUM Fr.

Cortex, bark or rind.

These plants are always resupinate, the caps lying upon their backs, closely attached to the surface of the bark of logs. The edges are frequently free and curl outward. The fruiting-surface is perfectly smooth and often polished. When dry, the fruiting-surface is often cracked, due to the contraction of the mycelial tissue of the cap. The genus, in many ways, resembles *Stereum*, but the latter genus is often shelving, the surface of the cap velvety, and the fruiting-surface uncracked when dry.

Corticium incarnatum (Pers.) Fr. (flesh-colored).

Goshen, *Underwood*.

Corticium salicinum Fr. (pertaining to the willow).

Goshen, *Underwood*; New Haven, *Clinton*.

Corticium vagum B. & C. (uncertain) var. **Solani**.

New Haven, *Clinton*.

CLAVARIACEÆ. *Coral Fungi.*

This is a family very unlike most families of mushrooms. There is no distinct cap; but, true to their name, the plants resemble coral formations. The substance of the plants is similar throughout, and the spores are borne over their entire upper surface. They are upright growers, and are frequently variously branched, but may be simple and club-shaped. They have striking characters not easily mistaken. The majority of the species are edible, though some are tough and leathery.

The plants are very common and occur abundantly throughout the season. They grow mostly in soil or in decaying leaves, but some few species grow on decaying wood. They are distinguished from the coral forms of Hydnaceæ by their upright habit of growth, the tips of the branches pointing away from the earth, while in Hydnaceæ the spines point downward. Some of the branched forms resemble certain species of Thelephoraceæ, but in Thelephoraceæ the tips of the branches are more or less flattened or blunt and bear no fruiting-bodies, while in Clavariaceæ the tips of the branches are acute and fertile.

The fruiting cells are not unlike those of Agaricaceæ and other Hymeniales. Over the entire surface of the fruit-body, the club-shaped basidia may be found by microscopical examination, and from these cells sterigmata arise, each bearing at its tip the basidiospore, or reproductive body.

Saccardo lists nine genera in this family, but only two are reported from Connecticut.

Key for the analysis of Connecticut Genera of Clavariaceæ.

Plants fleshy, simple or branched.....*Clavaria*
Plants leathery, branched, tomentose.....*Lachnocladium*

CLAVARIA Vaill.

Clava, a club.

The plants in this genus are more or less fleshy in consistency. They may be variously branched, but in many species they are simple and club-shaped. The branches are typically round, and are acute at the tips. The species are diffi-

cult to determine. The plants vary in their colorings; some are white, others red, yellow, or violet, and these colors, with the color of the spores, form a basis for the determination of the species. The spores are white, ochre-colored, or cinnamon.

Clavaria aurea Schæff. (golden).

Mansfield, July (61).

Clavaria cinerea Bull. (ashy).

East Hartford, *Hanmer*; Mansfield, Aug. (256).

Clavaria flava Schæff. (yellow).

Mansfield, June, Aug. (30, 250). Plate XL.

Clavaria fusiformis Sow. (spindle-shaped).

Waterford, *Hanmer*; Goshen, *Underwood*.

Clavaria Schäfferi Sacc.

Mansfield, July, *Hanmer*.

Clavaria pyxidata Pers. (box-like).

South Glastonbury, Bolton, *Hanmer*; Mansfield, July (186).

Clavaria pulchra Peck. (beautiful).

East Hartford, *Hanmer*.

Clavaria rugosa Bull. (wrinkled).

Rainbow, *Hanmer*.

Clavaria vermicularis (Scop.) Fr. (wormy).

Rainbow, *Hanmer*.

LACHNOCLADIUM Lev.

λάχνος, fleece; κλάδος branch.

These plants are distinguished from *Clavaria* by the somewhat leathery tissue of the fruit-body. This tissue is sometimes brittle and cartilaginous. The plants are more or less branched, and are found growing on the ground or on wood. They are frequently covered with a close, soft pubescence.

Lachnocladium Micheneri B. & C.

East Hartford, *Hanmer*.

Lachnocladium odoratum Atk. (odorous).

Mansfield.

A new species, soon to be described by Professor Atkinson.



PLATE XL. *Clavaria flava*. Yellow Clavaria. (Reduced one-third, often larger.)
Branches very numerous, fragile, yellow, tips toothed; stem thick, fleshy, white,
much branched; flesh white; spores white.

HYPOCHNACEÆ.

The plants of this family are mold-like or spider-web-like in substance, and lack the close, membranaceous character of other families. The tufts of basidia are placed closely side by side over the surface of the mycelial tissue.

No plants belonging to this family have been reported.

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metulæspora (Lepiota).....	24	platyphylla (Collybia).....	27
micaceus (Coprinus).....	51	plicatilis (Coprinus).....	51
Micheneri (Lachnocladium)..	74	popinalis (Clitopilus).....	47
micropus (Clitopilus).....	47	porosus (Boletinus).....	56
miniato-olivaceus (Boletus)..	59	portentosum (Tricholoma)...	26
miniatus (Hygrophorus).....	34	præcox (Pholiota).....	42

pratensis (Hygrophorus).....	35	scrobiculatum (Hydnum).....	69
procera (Lepiota).....	24	sejunctum (Tricholoma).....	26
pulchra (Clavaria).....	74	semi-globata (Stropharia)....	49
punctipes (Boletus).....	59	semi-hirtipes (Marasmius)...	25
punicus (Hygrophorus).....	35	semi-orbicularis (Naucoria)..	44
purpureus (Boletus).....	59	semi-pileatus (Polyporus)....	66
pyrogalus (Lactarius).....	30	separata (Anellaria).....	52
pyxidata (Clavaria).....	74	sepiaria (Lenzites).....	37
quercina (Dædalea).....	62	sepium (Trametes).....	62
radiata (Thelephora).....	70	septentrionale (Hydnum)....	69
radicata (Collybia).....	27	sericeum (Stereum).....	72
repandum (Hydnum).....	69	serotinus (Pleurotus).....	33
retiphyllus (Marasmius)....	25	solidipes (Panæolus).....	53
retirugus (Panæolus).....	53	speciosus (Boletus).....	60
rhodopolium (Entoloma)....	47	squamosum (Hydnum).....	69
rhodoxanthus (Gomphidius).	52	squamosus (Polyporus).....	66
Rodmanii (Agaricus).....	49	squarrosa (Pholiota).....	42
roseipes (Russula).....	32	squarosoides (Pholiota).....	42
rosellus (Cantharellus).....	36	stercoraria (Stropharia)....	49
roseus (Fomes).....	64	stipticus (Panus).....	39
rotula (Marasmius).....	25	strangulata (Amanitopsis)...	23
Roxanæ (Boletus).....	59	striæpes (Boletus).....	60
rubescens (Amanita).....	22	strictius (Entoloma).....	47
rubiginosa (Hymenochæte)...	71	strobilaceus (Strobilomyces).	56
rudis (Panus).....	38	strobiliformis (Amanita)....	22
rufescens (Hydnum).....	69	subaureus (Boletus).....	60
rugeocephalum (Hypholoma)..	50	subdulcis (Lactarius).....	30
rugosa (Clavaria).....	74	subglabripes (Boletus).....	60
Russellii (Boletus).....	59	sublateritium (Hypholoma)..	50
rutilans (Polyporus).....	66	subluteus (Boletus).....	60
rutilans (Tricholoma).....	26	subpurpureus (Lactarius)....	31
salicinum (Corticium).....	72	subtomentosus (Boletus)....	60
salicinus (Fomes).....	64	subvelutipes (Boletus).....	60
salicinus (Panus).....	39	sulphureus (Polyporus).....	66
sanguinea (Russula).....	32	tardus (Clitopilus).....	48
sapidus (Pleurotus).....	33	tenera (Galera).....	45
scaber (Boletus).....	59	terrestris (Thelephora).....	70
scaber (Boletus) var. alutaceus	59	terreum (Tricholoma).....	26
scaber (Boletus) var. areolatus	59	theiogalus (Lactarius).....	31
scaber (Boletus) var. mutabilis	60	tigrinus (Lentinus).....	38
scaber (Boletus) var. niveus.	60	torminosus (Lactarius).....	31
scaber (Boletus) var. olivaceus	60	torulosus (Panus).....	39
scaber (Boletus) var. testaceus	60	transmutans (Tricholoma)...	26
scabrosum (Hydnum).....	69	tremellosus (Merulius).....	63
Schæfferi (Clavaria).....	74	trivialis (Lactarius).....	31
Schweinitzii (Polyporus)....	66	trullissata (Clitocybe).....	37
scorodonius (Marasmius)....	25	turbinatus (Cortinarius)....	41

ulmarius (Pleurotus).....	33	vermiculosus (Boletus).....	60
umbilicatum (Hydnum).....	69	vermiculosus (Boletus) var.	
umbrosus (Pluteus).....	46	Spraguei.....	60
unicolor (Dædalea).....	62	verna (Amanita).....	22
unitinctus (Clitopilus).....	48	versicolor (Polystictus).....	65
vaginata (Amanitopsis).....	23	versipellis (Boletus).....	60
vaginata (Amanitopsis) var.		vialis (Lenzites).....	37
livida.....	23	virescens (Russula).....	32
varicosus (Marasmius).....	25	virgineus (Hygrophorus)....	35
variicolor (Bolbitius).....	43	volemus (Lactarius).....	31
velatipes (Amanita).....	22	volvata (Amanitopsis).....	23
vellereum (Hydnum).....	69	vulgaris (Mycena).....	28
vellereus (Lactarius).....	31	vulpinus (Lentinus).....	38
velutinus (Polystictus).....	65	zonata (Collybia).....	28
velutipes (Collybia).....	28	zonatum (Hydnum).....	69
vermicularis (Clavaria).....	74	zonatus (Polystictus).....	65

Second Report
on the
Hymeniales of Connecticut

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Preface

Since the publication of Bulletin No. 3, on the *Hymeniales* of Connecticut, the writer has continued investigations on fleshy and woody fungi, confining his attention more especially, however, to the edible species of the *Agaricaceæ*. The results of the study of this group of plants form the basis of Parts I and II of this report.

In Part I may be found keys to the Connecticut species of *Agaricaceæ*. These keys are based upon the author's observations and notes; but, in some cases where specimens have not been personally collected, original descriptions have been used. Keys to the genera of *Agaricaceæ* may be found on pages 17, 18, 19, and 20, Bulletin No. 3, of the State Geological and Natural History Survey. Descriptions of the genera may also be found in the same Bulletin.

Part II considers in detail the chief characters of some edible species of mushrooms.

Part III consists of a list of species of *Hymeniales* not reported in Bulletin No. 3. Some of these species have been collected by the late Dr. L. F. Underwood and by Dr. F. C. Earle in Redding and vicinity, and these specimens may be found in the Cryptogamic Herbarium of Columbia University at Bronx Park, N. Y. Mr. C. C. Hanmer of East Hartford has continued collecting, and has kindly contributed the results of his work to this report. The writer has collected in Mansfield and vicinity. Fifty-three species not before reported from the state are here listed.

The specimens collected by the writer during the last three years, as well as many of those previously collected, were compared with many type specimens in the Cryptogamic Herbarium of Harvard University. The writer wishes to express his deep appreciation of the assistance given him in this work by Dr. W. G. Farlow and Dr. A. F. Seymour of the Department of Cryptogamic Botany of Harvard University. Several weeks

were spent by the writer in the comparison of specimens, and in consulting the excellent reference books in the University Library and in Dr. Farlow's private collection of literature on fleshy fungi.

The half-tones in this bulletin were made from photographs taken by the author.

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Part I

**Keys to Connecticut Species of
Agaricaceae**



AMANITA Pers.

- | | |
|--|-----------------------|
| Volva splitting regularly all around, leaving a free border at base of stem; cap naked, or with broad, membranous patches | 1 |
| Volva splitting regularly all around, closely embracing the bulbous stem; cap covered with scattered, thick warts | 6 |
| Volva broken up into wart-like scales; cap bearing mealy patches which soon disappear, or with small, hard, pointed warts; stem bulbous at first, but bulb soon disappearing | 12 |
| 1. Gills yellow; cap red or orange, striate on the margin | <i>A. Caesarea</i> |
| Gills white..... | 2 |
| 2. Each basidium producing two spores..... | <i>A. bisporigera</i> |
| Each basidium producing four spores..... | 3 |
| 3. Cap viscid | 4 |
| Cap dry..... | 5 |
| 4. Volva closely wrapping base of stem, persistent... | <i>A. verna</i> |
| Volva cup-like around base of stem, often remaining in the soil when plant is collected..... | <i>A. phalloides</i> |
| 5. Stem bulbous; volva split in a circular manner, somewhat closely joined to the stem..... | <i>A. mappa</i> |
| Stem not bulbous; volva free, fitting closely around the stem; upper margin thin; lower part thick, giving stem a bulbous appearance..... | <i>A. sprete</i> |
| 6. Cap red or yellow..... | 7 |
| Cap white, or slightly tinged with yellow..... | 9 |
| 7. Cap 4 or more inches broad, covered with rough, white or yellow warts; margin slightly striate.... | <i>A. muscaria</i> |
| Cap small, 1 to 2 inches broad..... | 8 |
| 8. Margin of cap striate..... | <i>A. Frostiana</i> |
| Margin of cap not striate..... | <i>A. flavoconia</i> |
| 9. Stem tapering below the bulb into a root-like prolongation | 10 |

- Stem ending abruptly below the bulb..... 11
10. Cap covered with large, pyramidal, hard warts; gills
free from the stem.....*A. strobiliformis*
Cap covered with small, angular, floccose warts; gills
adnexed*A. solitaria*
11. Volva not margined, tapering above into stem; cap
thin*A. candida*
Volva forming a distinct margin which rolls towards
the stem at the edge; cap often tinted with yellow,
fleshy*A. cothurnata*
12. Plants of a distinct red-brown color.....*A. rubescens*
Plants white or yellow-brown..... 13
13. Cap white; bulb large, abrupt.....*A. abrupta*
Cap not white..... 14
14. Cap, volva, ring, and upper part of stem canary-yellow;
stem only slightly bulbous.....*A. flavo-rubescens*
Cap yellow-brown; bulb medium, tapering....*A. velatipes*

AMANITOPSIS Roz.

- Cap covered with thin scales; volva thick, fleshy *A. lepidota*
Cap not scaly..... 1
1. Cap with warts; volva quickly splitting into thread-
like fragments.....*A. strangulata*
Cap not warty..... 2
2. Cap covered with a mealy substance; volva soon
disappearing*A. farinosa*
Cap smooth; volva persistent..... 3
3. Volva short, cup-shaped; margin of cap only slightly
striate*A. volvata*
Volva long, free from the stem but enclosing it in a
sheath-like manner..... 4
4. Gills white; cap white or mouse-gray.....*A. vaginata*
Gills dingy; cap leaden-brown.....*A. vaginata* var. *livida*

LEPIOTA Fr.

- Surface of stem and cap sticky.....*L. illinita*
Surface of cap and stem dry..... 1
1. Surface of cap smooth, shiny, white.....*L. naucinoides*
Surface of cap scaly or granular..... 2



PLATE I. *Amanita rubescens*. Red Amanita. (Reduced one-third.)
Cap dull red, covered with thin, floccose, gray scales; gills white; stem cylindrical with prominent bulb; volva quickly disappearing.



PLATE II. *Amanitopsis vaginata*. (Natural size.)

Cap thin, brown or nearly white, umbonate in center; margins deeply striate; stem 4 to 5 inches high, thicker at base; volva distinct.



PLATE III. *Lepiota naucinoidea*. (Reduced one-third.)

Cap chalk-white, nearly globular before expanding, becoming oblate with age; gills white, stem 1 to 3 inches long, thickened at base, tapering upward.



PLATE IV. *Marasmius oreades*. Fairy Ring. (Reduced one-fifth.)

Cap 1 to 1½ inches in diameter, thin, tough, brown, then tan-colored; stem 1½ to 2 inches long, equal, solid white, covered with down.



PLATE V. *Marasmius rotula*. (Natural size.)

Cap $\frac{1}{4}$ inch in diameter, membranaceous, umbilicate, plicate, white; stem slender, bony in texture, white or partly black.



PLATE VI. *Marasmius semihirtipes*. (Reduced one-third.)

Cap 1 inch to 1½ inches broad, convex, brown, striate on margins; stem equal, densely hairy at base.

2. Flesh changing to red where bruised; cap covered with red scales.....*L. americana*
Flesh not changing to red..... 3
3. Stem with movable ring.....*L. procera*
Stem with fixed ring..... 4
4. Surface of cap covered with many small, erect, pointed scales, light brown or olive-brown in color...*L. asperula*
Surface of cap not covered with small, erect, pointed scales 5
5. Surface of cap granular; plants red-yellow...*L. granulosa*
Surface of cap not granular..... 6
6. Surface of cap covered with a dense white veil of mealy down.....*L. farinosa*
Surface of cap with distinct, persistent scales..... 7
7. Stem covered with soft, floccose scales..... 8
Stem smooth; surface of cap cracking into numerous reddish scales in a crested manner.....*L. cristata*
8. Spores elliptical*L. clypeolaria*
Spores spindle-shaped.....*L. metulaespora*

MARASMIUS Fr.

- Stems cohering into a somewhat solid mass...*M. cohaerens*
Stems separate and distinct..... 1
1. Plants succulent and fleshy.....*M. oreades*
Plants becoming dry and leathery..... 2
 2. Flesh having odor and taste resembling that of onions*M. scorodonius*
Flesh without distinct odor and taste..... 3
 3. Stem black, shining; cap thin, depressed in center *M. rotula*
Stem. not black..... 4
 4. Stem hairy below, smooth above..... 5
Stem smooth or slightly tomentose..... 6
 5. Stem filled with dark, blood-colored juice.....*M. varicosus*
Stem without colored juice, densely hairy below.....
M. semihirtipes
 6. Gills permanently connected by veins.....*M. retiphylus*
Gills not connected by veins; stem long and graceful;
cap with striate margins.....*M. elongatipes*

TRICHOLOMA Fr.

- Plants violet-tinted ; stem bulbous ; flesh white *T. personatum*
 Plants not violet-tinted..... 1
1. Cap viscid..... 2
 Cap not viscid..... 5
2. Stem stout, 3 to 6 inches long, 1 inch thick...*T. portentosum*
 Stem slender, 1 to 4 inches long, $\frac{3}{4}$ inch thick..... 3
3. Cap brown or red-brown ; gills becoming spotted with
 red as plants mature.....*T. transmutans*
 Cap with no shade of red ; gills never spotted with red 4
4. Cap yellow with black streaks.....*T. sejunctum*
 Cap yellow or green-yellow without streaks....*T. equestre*
5. Plants with a strong odor resembling soap ; flesh
 red*T. saponaceum*
 Plants without strong odor..... 6
6. Cap covered with dark red hairs ; flesh yellow...*T. rutilans*
 Cap not red..... 7
7. Taste bitter ; plants pure white.....*T. album*
 Taste not bitter..... 8
8. Plants gray-brown or mouse-colored.....*T. terreum*
 Plants white, tinted with yellow ; center of cap
 darker*T. albo-flavidum*

COLLYBIA Fr.

- Stem terminating in a long, tapering, pointed root *C. radicata*
 Stem not terminating in a single root..... 1
1. Stem densely hairy ; plants growing on stumps *C. velutipes*
 Stem not densely hairy..... 2
2. Gills broad, distant..... 3
 Gills narrow..... 5
3. Plants large and coarse ; cap 3 to 4 inches broad ;
 stem 3 to 4 inches long, $\frac{1}{2}$ inch thick.....*C. platyphylla*
 Plants smaller..... 4
4. Stem seldom over $1\frac{1}{2}$ inches long, $\frac{1}{2}$ inch thick *C. esculenta*
 Stem 2 to 4 inches long.....*C. lacerata*
5. Stems united at base..... 6
 Stems not united at base..... 7
6. Stem downy over its entire surface, long.....*C. confluens*
 Stem downy only at base, short.....*C. acervata*



PLATE VII. *Collybia platyphylla*. (Reduced one-half.)

Cap 3 to 4 inches across; flesh thin, dark brown when young, becoming grey or dingy white with age; stem 3 to 4 inches long, $\frac{1}{2}$ inch thick, equal.



PLATE VIII. *Collybia butyracea*. Butterfly Collybia. (Reduced one-fifth.)

Cap 2 to 3 inches across, thick at center, becoming thin at margins, red-brown in color, becoming white with age, shining, soft to touch as if oiled; stem 2 to 3 inches high, hollow.



PLATE IX. *Collybia zonata*. (Natural size.)

Cap $\frac{1}{2}$ inch to $1\frac{1}{2}$ inches wide, dark brown, covered with dense fibrils, uneven, forming distinct zones, membranaceous; stem even, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long.

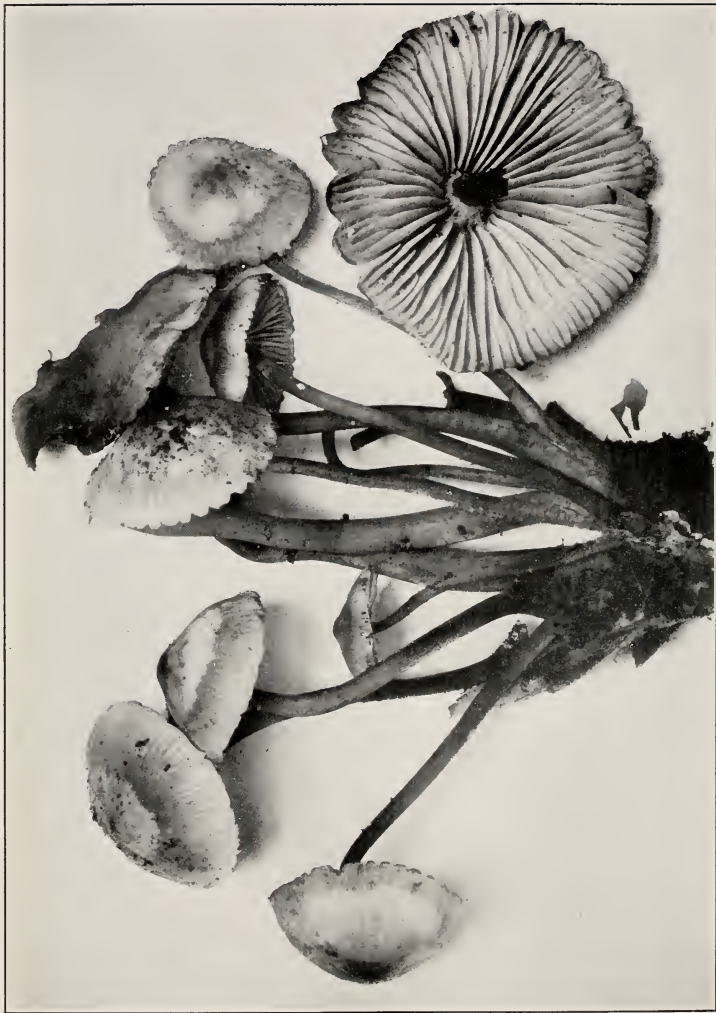


PLATE X. *Mycena haematopoda*. (Natural size.)

Cap $\frac{1}{2}$ to $1\frac{1}{2}$ inches wide; flesh thin, bell-shaped, striate, red-brown; stems clustered, about 2 inches long, thicker at the base, which is covered with a white down. When broken, a blood-red juice flows from the stem.



PLATE XI. *Mycena lesiana*. (Reduced one-third.)

Cap $\frac{1}{2}$ inch broad, rich golden yellow, deeply striate; stem 1 to $1\frac{1}{2}$ inches long, equal, tufted, coated at base with dense hairs.

7. Plants often growing on other fleshy fungi; stem with distinct tuber at base.....*C. tuberosa*
Plants not growing on other fungi; stem without tubers 8
8. Stem grooved, striate with fibers..... 9
Stem not grooved..... 10
9. Stem even or narrowed towards the base; cap white, sometimes spotted with red.....*C. maculata*
Stem narrowed towards the top; cap red-brown, buttery to the touch.....*C. butyracea*
10. Stem covered with fibrillose tomentum; cap umbilicate*C. zonata*
Stem smooth..... 11
11. Stem white.....*C. strictipes*
Stem red or brown.....*C. dryophila*

MYCENA Fr.

- Plants with a colored juice.....*M. haematopoda*
Plants without colored juice..... 1
1. Stem clothed with blue hairs at base; all parts of young plant tinged with blue.....*M. cyanothrix*
Stem not clothed with blue hairs at base..... 2
2. Gills and cap flesh-colored.....*M. sub-incarnata*
Gills and cap not flesh-colored..... 3
3. Surface of cap viscid or glutinous..... 4
Surface of cap not viscid..... 5
4. Cap gray or green-yellow; gills joined squarely to stem*M. epipterygia*
Cap brown or gray with dark lines; gills running down stem.....*M. vulgaris*
5. Cap yellow, deeply striate.....*M. lesiana*
Cap not deeply striate..... 6
6. Gills purplish with a darker toothed margin. *M. pelianthina*
Gills gray, turning pink with age, connected by veins*M. galericulata*

LACTARIUS Fr.

- Plants with watery juice; cap tan-colored, clothed with close tomentum.....*L. aquifluus*
Plants with variously colored, milky juice, this milk sometimes disappearing with age..... 1

1. Milk white at first, usually acrid from the first..... 2
 Milk white at first, mild, or changing from mild to acrid 8
 Milk highly colored from the first..... 21
2. Cap viscid, margin incurved..... 3
 Cap not viscid..... 5
3. Cap dingy, green-gray; surface often zoned with
 darker blotches.....*L. blennius*
 Cap with no tinge of green..... 4
4. Gills yellow or pink; cap tinged with red, surface
 often zoned.....*L. torminosus*
 Gills white; cap yellow or pink, zoneless.....*L. trivialis*
5. Milk white, soon changing to sulphur-yellow *L. chrysorrheus*
 Milk permanently white..... 6
6. Stem solid..... 7
 Stem stuffed with fibers; gills squarely joined to the
 stem, very narrow, crowded.....*L. pergamenus*
7. Gills broad, distant; margin of cap or whole surface
 densely clothed with velvety tomentum..... 8
 Gills narrow, decurrent; surface of cap smooth; milk
 very acrid.....*L. piperatus*
8. Whole surface of cap minutely velvety-tomentose; soft
 to the touch, 2 to 5 inches broad.....*L. vellereus*
 Surface of cap smooth, margin inrolled and covered
 with tomentum, 3 to 5 inches broad.....*L. deceptivus*
 Surface of cap smooth, margin inrolled, extreme edge
 minutely silky, 1 to 2 inches broad.....*L. involutus*
9. Flesh having a strong, pleasant odor, especially when
 dry*L. camphoratus*
 Flesh odorless, or with a slight fragrance..... 10
10. Cap viscid..... 11
 Cap not viscid..... 15
11. Milk changing to sulphur-yellow.....*L. theiogalus*
 Milk permanently white..... 12
12. Gills white, soon changing to brick-red or salmon..... 13
 Gills not changing to red..... 14
13. Cap cinnamon-colored; milk sweet.....*L. quietus*
 Cap ashy or buff-gray; milk becoming somewhat
 acrid*L. fuliginosus*



PLATE XII. *Lactarius torminosus*. (Reduced one-third.)

Cap 3 to 4 inches across, viscid when moist, pale flesh color tinged with yellow; stem 1 to 3 inches long, solid; milkwhite, unchanging, acrid.



PLATE XIII. *Lactarius vellereus*. (Reduced one-half.)

Cap white, 3 to 6 inches across; flesh thick, rigid, tapering towards margins, which are inrolled when young; margins densely tomentose; stem 2 to 3 inches long, firm; milkwhite, scanty.



PLATE XIV. *Lactarius involutus*. (Reduced one-third.)
Cap white, 2 to 3 inches broad; flesh thick, equal nearly to margins, which are deeply involuted when young, expanding somewhat with age; stem $\frac{1}{2}$ to 1 inch long, equal, solid; milkwhite, very peppery.

14. Cap 3 to 6 inches broad, flesh-colored or clay-colored *L. pallidus*
 Cap 1½ to 2½ inches broad, smoky brown..... *L. fumosus*
15. Cap downy..... 16
 Cap smooth..... 19
16. Cap gray; gills white, tinged with yellow; milk slightly acid..... *L. griseus*
 Cap not gray..... 17
17. Gills white, changing to salmon where wounded *L. lignyotus*
 Gills not changing to salmon where wounded..... 18
18. Cap 3 to 5 inches broad, dark red-brown..... *L. corrugis*
 Cap 2 to 3 inches broad, buff-colored..... *L. luteolus*
19. Gills narrow, close, white, tinged with red..... 20
 Gills distant, white or cream-colored; stem ½ to 1 inch long, solid..... *L. hygrophoroides*
20. Cap ½ to 2 inches broad; milk scanty..... *L. subdulcis*
 Cap 2 to 5 inches broad; milk copious..... *L. volemus*
21. Stem spotted in a pitted manner; milk yellow, changing to brick-red..... *L. deliciosus*
 Stem not spotted..... 22
22. Milk saffron-yellow..... *L. chelidonium*
 Milk not yellow..... 23
23. Milk dark red; cap the same color..... *L. subpurpureus*
 Milk dark blue; cap indigo-blue..... *L. indigo*

RUSSULA Pers.

- Plants with a strong fetid odor..... 1
 Plants without fetid odor..... 2
1. Cap 3 to 5 inches broad; gills exuding watery drops *R. foetens*
 Cap 1 to 3 inches broad; gills not exuding watery drops *R. pectinata*
2. Gills forked..... 3
 Gills not distinctly forked..... 7
3. Cap green or yellow-green; taste tardily acid; gills white 4
 Cap red or rust-colored..... 5
4. Stem solid, firm; gills frequently forked..... *R. furcata*
 Stem spongy; gills once or twice forked... *R. aeruginescens*

5. Cap somewhat depressed or funnel-shaped, blood-red;
gills crowded, narrow, somewhat decurrent. . . *R. sanguinea*
Cap convex, then plane, not blood-red; gills crowded,
broad, not decurrent. 6
6. Taste slowly acrid; cap flesh-colored, becoming dingy-
white *R. rosacea*
Taste not acrid; cap pale red or rust-colored. . . *R. depallens*
7. Margin of cap at first bent inward. 8
Margin of cap not at first bent inward. 10
8. Flesh changing to red when broken; cap becoming
black *R. nigricans*
Flesh white, not changing color on exposure to air. . . . 9
9. Stem very short, white. *R. brevipes*
Stem longer, gray-black. *R. adusta*
10. Cap without viscid cuticle, absolutely dry, margin not
grooved 11
Cap with viscid cuticle, especially in rainy weather,
margin grooved or covered with wart-like swellings 16
11. Cap bright yellow. *R. flavida*
Cap not yellow. 12
12. Cap green or pallid with no tinge of red; gills
white *R. virescens*
Cap not green, tinged with red, pink, or purple. 13
13. Cap white or tinged with pink at margin. *R. albella*
Cap not white. 14
14. Taste very acrid; flesh white, somewhat red under
cuticle *R. rubra*
Taste mild. 15
15. Cap blood-red; stem 3 inches long, 1 inch thick. . . . *R. lepida*
Cap dingy purple, turning olive-colored; gills yellow
R. olivacea
16. Gills white. 17
Gills yellow. 19
17. Taste mild; cap clear yellow. *R. citrina*
Taste acrid 18
18. Cap 1 to 1½ inches broad. *R. fragilis*
Cap 3 to 4 inches broad. *R. emetica*
19. Cap dark purple. *R. atropurpurea*
Cap red or yellow. 20



PLATE XV. *Russula sanguinea*. (Reduced one-third.)
Cap 2 to 4 inches wide, blood-red, becoming pale at margin, convex, then depressed; flesh thick, white;
gills decurrent; stem stout; taste acrid.



PLATE XVI. *Russula virescens*. (Green Russula. (Reduced one-fourth.)

Cap 3 to 5 inches wide, globose at first, depressed with age; flesh thick, white; surface dry, green or dingy white; stem solid, white; taste mild.



PLATE XVII. *Russula decolorans*. (Reduced one-fourth)

Cap 3 to 4 inches wide, thick, orange red at first, becoming yellow with age, viscid when moist; stem 1 to 3 inches long, cylindrical, white; gills with yellow tinge; taste mild.

20. Edge of gills lemon-yellow..... 21
 Edge of gills not lemon-yellow..... 22
21. Cap lemon-yellow or orange.....*R. aurata*
 Cap bright blood-red.....*R. alutacea*
22. Cap 1 to 2 inches broad..... 23
 Cap 3 to 5 inches broad..... 24
23. Stem tapering upwards, stuffed or sometimes hollow
R. rosripes
 Stem equal, solid.....*R. Mariae*
24. Stem short, 1 to 3 inches long, thick and club-shaped
R. integra
 Stem elongated, 3 to 5 inches long, cylindrical *R. decolorans*

PLEUROTUS Fr.

- Veil appendiculate around margin of young cap; cap
 variegated with dingy brown, spot-like scales.. *P. dryinus*
 No evidence of remnants of veil on margin of young cap 1
1. Gills extending down the stem (decurrent)..... 2
 Gills not decurrent..... 5
2. Stem very short or absent..... 3
 Stem distinct..... 4
3. Cap 1 to 3 inches broad, viscid when young, variously
 tinged with dark yellow-green, or red.....*P. scrotinus*
 Cap 3 to 5 inches broad, not viscid when young, yellow-
 white, becoming darker with age.....*P. ostreatus*
4. Spores in mass tinged with lilac; stem 1 to 2 inches
 long*P. sapidus*
 Spores in mass pure white; stem 1/2 inch long or
 shorter, channeled.....*P. petaloides*
5. Stem 2 to 3 inches long, solid.....*P. ulmarius*
 Stem often absent; when present, stuffed, becoming
 hollow*P. lignatilis*

HYGROPHORUS Fr.

- Cap distinctly viscid..... 1
 Cap viscid only when moist..... 4
 Cap not viscid when moist..... 9
1. Cap white, then deep red; gills white, spotted with
 red*H. erubescens*
 Cap not tinged with red..... 2

2. Cap, gills, and flesh, yellow.....*H. nitidus*
Cap white or dark gray..... 3
3. Cap white, covered with light yellow floccose scales at
involute margin.....*H. chrysodon*
Cap dark gray, without scales on even margin *H. calophyllus*
4. Cap red, or tinged with red..... 5
Cap not red..... 8
5. Cap 2 to 4 inches broad, blood-scarlet; flesh of same
color*H. puniceus*
Cap less than 2 inches broad..... 6
6. Cap distinctly conical.....*H. conicus*
Cap convex, becoming plane..... 7
7. Gills connected by veins; cap bright scarlet, becoming
pale with age.....*H. coccineus*
Gills not connected by veins; cap red or red-yellow...
H. miniatus
8. Gills distinctly decurrent.....*H. ceraceus*
Gills decurrent only by a tooth.....*H. chlorophanus*
9. Cap shining white.....*H. virgineus*
Cap not white..... 10
10. Cap gray.....*H. caprinus*
Cap yellow or buff.....*H. pratensis*

CANTHARELLUS Adanson.

- Cap and stem tubular..... 1
- Cap and stem solid..... 3
1. Cap thin, funnel-shaped; stem smooth..*C. infundibuliformis*
Cap fleshy 2
2. Surface of cap densely covered with floccose scales; cap
yellow, elongated, funnel-shaped or trumpet-shaped
C. floccosus
Surface of cap smooth, tan-colored.....*C. brevipes*
3. Plants red 4
Plants yellow or gray..... 5
4. Surface and flesh of plants deep blood-red..*C. cinnabarinus*
Surface of cap pink; flesh white.....*C. rosellus*
5. Cap dark gray; flesh thin; gills white.....*C. dichotomus*
Cap yellow or orange..... 6



PLATE XVIII. *Hygrophorus miniatus*. (Natural size.)

Cap $\frac{1}{2}$ to 1 inch wide, convex, then umbilicate, crimson, becoming pale yellow.
 stem $1\frac{1}{2}$ to 2 inches long, equal, crimson or yellow; gills yellow, thick, distant



PLATE XIX. *Cantharellus floccosus*. (Reduced one-fifth)

Cap vase-form, $1\frac{1}{2}$ to 3 inches across, bright yellow at first with numerous darker floccose scales, becoming dull yellow-brown with age; flesh firm; stem short, solid; gills thick, blunt, forking.

6. Gills narrow, close; cap dull orange; margin curved downward *C. aurantiacus*
 Gills distant 7
7. Flesh fragrant; cap smooth, egg-yellow, margin elevated *C. cibarius*
 Flesh odorless; cap covered with brown scales. . *C. lutescens*

OMPHALIA Fr.

- Plants bright golden-yellow, scattered on coniferous logs or twigs. *O. scabriuscula*
 Plants red-yellow. 1
1. Plants usually growing in dense clusters on coniferous stumps, logs, or twigs; stem 1 inch long, 1 line thick
O. campanella
 Plants solitary or in small clusters; stem 1 to 2 inches long, 1/2 line thick. *O. campanella*, var. *sparsa*

CLITOCYBE Fr.

- Cap funnel-shaped. 1
 Cap not funnel-shaped. 2
1. Cap pale red. *C. infundibuliformis*
 Cap pure white. *C. adirondackensis*
2. Plants fragrant; cap tinged with green. *C. odora*
 Plants not fragrant. 3
3. Plants bright, rich yellow; fleshy. *C. illudens*
 Plants not bright yellow. 4
4. Cap white, tinged with brown or gray; stem distinctly thickened near the base. *C. clavipes*
 Cap violet or purple-tinted. 5
5. Gills distinctly decurrent. 6
 Gills attached squarely to the stem, or decurrent only by a tooth. 7
6. Cap dark purple; stem purple, streaked with white fibrils, equal, densely clothed with white hairs at base *C. amethystina*
 Cap pale yellow, with tints of purple; stem swollen in the middle. *C. ochro-purpurea*
7. Stem bulbous, thickly clothed with white tomentum. . .
C. trullissata
 Stem not bulbous, slender, smooth. *C. laccata*



PLATE XX. *Lentinus ursinus*. (Reduced one-fourth.)
Cap shelving, 2 to 4 inches broad, dark brown on older portion, becoming yellow-brown at margin; surface
spongy with a dense tomentum.

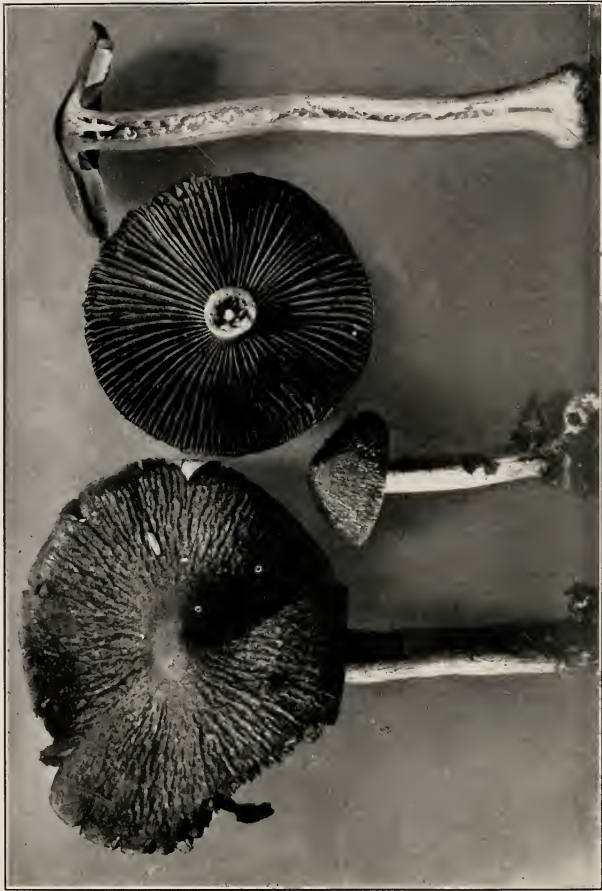


PLATE XXI. *Cortinarius corrugatus*. (Reduced one-third.)

Cap 2 to 5 inches wide, deeply ridged or corrugated, nearly smooth at center, umbonate, dark brown in color; stem 3 or 4 inches long, stuffed.

PAXILLUS Fr.

- Plants orange-yellow *P. aurantiacus*
 Plants not orange-yellow 1
1. Margin of cap strongly inrolled (involute).... *P. involutus*
 Margin of cap straight or slightly inrolled..... 2
 2. Cap 2 to 4 inches broad, rust-color; gills adnate....
P. atro-tomentosus
 Cap 1 to 2 inches broad, dingy yellow; gills decur-
 rent at base..... *P. panuoides*

CORTINARIUS Fr.

- Plants small; cap 1 to 1½ inches broad..... *C. vernalis*
 Plants larger, seldom less than 2 inches broad..... 1
1. Plants some shade of red or yellow..... 2
 Plants tinged with violet..... 9
 2. Cap viscid..... 3
 Cap not viscid..... 5
 3. Cap coarsely corrugated..... *C. corrugatus*
 Cap not corrugated..... 4
 4. Stem with a turbinate bulb at base, stuffed, then
 hollow *C. turbinatus*
 Stem not bulbous, solid, scaly.... *C. collinitus*
 5. Stem and cap scaly..... 6
 Stem and cap not scaly..... 7
 6. Cap fleshy throughout; gills crowded; stem stuffed,
 then hollow *C. bolaris*
 Cap thin at the margin; gills distant; stem solid....
C. armillatus
 7. Stem with a more or less persistent ring..... *C. flavifolius*
 Stem with no ring..... 8
 8. Cap cinnamon-colored; stem yellow; gills at first
 yellow *C. cinnamomeus*
 Cap scarlet or blood-red; gills of a similar color....
C. cinnabarinus
 9. Cap viscid, sometimes spotted with white..... *C. iodes*
 Cap not viscid..... 10
 10. Stem bulbous, then elongated and equal; color of cap
 changing from violet to brick-red..... *C. torvus*
 Stem constantly bulbous..... 11

11. Bulb depressed-emarginate.....*C. obliquus*
 Base of stem club-shaped.....*C. violaceus*

PHOLIOTA Fr.

- Plants growing in soil..... 1
 Plants growing on wood..... 2
 1. Cap 1 to 2 inches broad.....*P. praecox*
 Cap 3 to 5 inches broad, even in the center, wrinkled
 in pits at the sides.....*P. caperata*
 2. Cap less than 2 inches broad; surface torn into minute
 scales, dry; flesh thin.....*P. curvipes*
 Cap more than 2 inches broad; flesh thick..... 3
 3. Cap viscid..... 4
 Cap not viscid, yellow-red, with darker, revolute scales
P. squarrosa
 4. Cap and stem densely covered with thick, dark brown
 scales*P. squarrosoides*
 Cap and stem less densely covered with thin, red-
 yellow scales.....*P. adiposa*

INOCYBE Fr.

- Cap floccose, scaly; stem scaly.....*I. lanuginosa*
 Cap covered with silky fibers..... 1
 1. Stem smooth; cap longitudinally cracked when ex-
 panded*I. rimosa*
 Stem covered with hairy fibers; cap never cracking..
I. floccosa

FLAMMULA Fr.

- Plants large; cap more than 4 inches broad, dry, buff-
 color*F. magna*
 Plants small 1
 1. Cap viscid..... 2
 Cap not viscid..... 3
 2. Stem solid, yellow; cap yellow.....*F. polychroa*
 Stem hollow or stuffed; cap brick-red.....*F. fusus*
 3. Cap covered with silky threads near margin.....*F. alnicola*
 Cap smooth..... 4
 4. Cap pale yellow.....*F. flavida*
 Cap cinnamon or tawny-orange.....*F. hybrida*



PLATE XXII. *Cortinarius violaceus*. (Reduced one-third)
Cap 2 to 4 inches wide, dark violet in color; stem 2 to 4 inches long, equal except
bulbous base, violet colored; flesh similar in color



PLATE XXIII. *Pholiota caperata*. (Natural size.)
Cap 2 to 5 inches broad, convex, yellow-brown, often roughened on surface with ridges or pits.



PLATE XXIV. *Pluteus granularis*. (Reduced one-third)
Cap 2 to 5 inches wide, convex, then expanded, dark brown, with surface broken
into numerous small patches, surface also somewhat ridged or wrinkled.



PLATE XXV. *Pluteus cervinus*.

Cap 2 to 5 inches wide, campanulate, then expanded, gray, yellow-brown, or fawn-colored; plants solitary or tufted.



PLATE XXVI. *Pluteus tomentosulus*. (Natural size.)

Cap 1 to 1½ inches wide, campanulate, becoming flat with age ; surface covered with a dense white tomentum.

GALERA Fr.

Plants growing in moss; gills connected by veins....

G. hypnorum

Plants not in moss; gills unconnected.....*G. tenera*

PLUTEUS Fr.

Surface of cap in young plants covered with silky fibrils 1

Surface of cap in young plants smooth or slightly wrinkled*P. admirabilis*

1. Plants large; cap 4 to 6 inches in diameter, fleshy..... 2

Plants small 3

2. Cap covered with a dense, dark brown tomentum in center, broken into granules near margin; gills white, then flesh-color.....*P. granularis*

Cap fibrillose, becoming smooth at disk; gills white, then flesh-color.....*P. cervinus*

Cap fibrillose, becoming wrinkled at disk; gills dark brown, fringed or toothed on the margins....*P. umbrinus*

3. Surface of cap wrinkled and darker at disk; stem white, tinged with blue or green, fibrillose....*P. salicinus*

Surface of cap not wrinkled..... 4

4. Stem smooth.....*P. longistriatus*

Stem covered with silky fibrils.....*P. tomentosulus*

ENTOLOMA Fr.

Stem solid..... 1

Stem hollow 2

1. Cap large, 4 to 6 inches broad; flesh white.....*E. grande*

Cap small, 1 to 2 inches broad; flesh pink....*E. Grayanum*

2. Cap with a distinct, central elevation (umbonate) *E. strictius*

Cap not umbonate.....*E. rhodopolium*

CLITOPILUS Fr.

Gills decurrent 1

Gills squarely joined to the stem, or slightly decurrent 5

1. Gills somewhat forked; taste very bitter..*C. novboracensis*

Gills not forked; taste mild..... 2

2. Cap covered with a gray powder or bloom.....*C. prunulus*

Cap not covered with powder..... 3

3. Cap somewhat viscid when moist, often irregular;
stem short.....*C. orcella*
Cap not viscid..... 4
4. Cap 1 to 2 inches broad; gills dark gray; stem stuffed
C. popinalis
Cap 2 to 4 inches broad; gills white or pale gray;
stem solid.....*C. abortivus*
5. Cap glabrous..... 6
Cap silky, umbilicate, somewhat zoned.....*C. micropus*
6. Cap 1 inch broad; stem with a close white tomentum
at base.....*C. unitinctus*
Cap 1 to 3 inches broad, slightly fibrillose; often
growing in greenhouses.....*C. tardus*

AGARICUS Linn.

- Stem terminating in an abrupt bulb.....*A. abruptus*
Stem not distinctly bulbous..... 1
1. Cap thin..... 2
Cap fleshy 3
 2. Cap yellow-white, fibrillose-silky.....*A. comptulus*
Cap white, brown in center, covered with minute brown
scales*A. placomyces*
 3. Gills narrow, rounded behind.....*A. Rodmani*
Gills broad 4
 4. Gills at first white; ring on stem large and thick *A. arvensis*
Gills at first pink; ring more or less torn, often dis-
appearing*A. campestris*

Varieties of *Agaricus campestris*

- Cap covered with red scales.....var. *pratricula*
Cap not covered with red scales..... 1
1. Cap brown or yellow-brown, covered with minute hairs
var. *hortensis*
Cap and stem brown, scaly.....var. *villaticus*

STROPHARIA Fr.

- Cap hemispherical at maturity; stem glabrous *S. semiglobata*
Cap at first hemispherical, expanding at maturity; stem
downy below the ring.....*S. stercoraria*



PLATE XXVII. *Hypholoma appendiculatum*. (Natural size.)

Cap 1 to 3 inches wide, dingy white with shades of yellow, fleshy when young, becoming leathery with age; margin of young cap fringed with remnants of the veil.



PLATE XXVIII. *Coprinus micaceus*. (Reduced one-third.)
Cap $\frac{1}{2}$ to $1\frac{1}{2}$ inches wide, campanulate, striate; margin uneven; flesh thin.

HYPHOLOMA Fr.

- Surface of cap marked by strong wrinkles which radiate
from the center..... 1
- Surface of cap smooth..... 2
1. Cap brown; stem brittle, slightly mealy at the top...
H. hymenoccephalum
Cap gray, tinged with yellow; stem fleshy, smooth....
H. rugocephalum
2. Flesh fragile; remnant of veil often left on margin
of cap..... 3
Flesh tough; margin of cap without remnants of veil 4
3. Cap brown, often shaded to ochre at margin; gills
somewhat forked, umber-colored.....*H. subaquilum*
Cap gray-brown; gills not forked, white, then brown
H. appendiculatum
4. Stem solid; flesh white.....*H. sublateralitium*
Stem hollow; flesh yellow.....*H. fasciculare*

COPRINUS Pers.

- Cuticle of cap separating into shaggy, concentric scales;
stem with a well developed ring.....*C. comatus*
- Cuticle not breaking into shaggy scales..... 1
1. Cap 2 to 4 inches broad, smooth, or covered with a few
obscure scales; ring imperfect.....*C. atramentarius*
Cap less than 2 inches broad; ring absent..... 2
2. Cap covered with minute glistening scales.....*C. micaceus*
Cap smooth, very fragile.....*C. plicatilis*

PANAEOLUS Fr.

- Stem solid; cap white.....*P. solidipes*
- Stem hollow..... 1
1. Surface of cap ridged.....*P. retirugis*
Surface of cap smooth.....*P. campanulatus*



Part II

Some Edible Species of Agaricaceae

AMANITA Pers.

As noted in the preliminary report, this genus includes the most violently poisonous species to be found among the fleshy fungi. Therefore these species should be most carefully avoided by the amateur collector. Never should "button" forms be collected for eating, and by all means avoid white specimens. However, the following species of *Amanita* are classed as edible.

***Amanita Caesarea* Scop.** Kingly *Amanita*. This is one of the most striking forms of the genus. It is found abundantly in open woods in Mansfield during July, and occasional specimens occur during the autumn months. Its large size, brilliant coloring, striate or lined margins, with the absence of warts or scales on the surface of the cap, serve as characteristics which distinguish it from its poisonous relatives. The characters of the species are so distinct that, when once positively identified, *A. Caesarea* is not likely to be confused with non-edible kinds. Unless positively identified, it might be possible to mistake this edible *Amanita* for two of its relatives, *A. Frostiana* and *A. muscaria*. The plants of the edible species, when small, resemble the former; while, in color, the edible species resembles the latter; but the floccose or compact scaly cap of *A. muscaria* should prevent confusing the two.

A. Caesarea has a distinct white volva or cup at the base of the stem. This is quite persistent, and is usually found on mature specimens. The stem and usually the gills are distinctly yellow. In the immature specimens, the gills are covered by a delicate yellow veil which falls around the stem as the cap expands. The stem is somewhat floccose or downy below the ring. The gills are not attached to the stem, and vary in color from white to deep lemon-yellow, the yellow shades appearing in the typical specimens. The flesh is white, with yellow or yellow-red tints as it approaches the outside.

***Amanita rubescens* Fr.** (Plate I) is not liable to be confused with any poisonous species. Its characters are quite

distinct. The volva, or cup, is very fragile, and usually disappears as the plants approach maturity. The color of the whole plant is a dull red-brown, often changing with age to a fawn-color, thus very different from the brilliant red tints of *A. Caesarea*. When bruised or broken the flesh is quickly discolored and changed to red. The cap is quite large, ranging from three to five inches in diameter, and before maturity is covered by dense white scales, the remains of the universal veil. During rainy weather and frequently at maturity these scales disappear, leaving the surface smooth. The stem is often four or five inches long and frequently an inch thick, somewhat enlarged at the base, and surrounded at the top by the large white membranous ring, the remains of the partial veil. The gills are white or whitish, quickly discolored in handling, and are free from the stem. The species occurs in large numbers during the summer and autumn months.

***Amanita strobiliformis* Vitt.** This species has never been collected by the writer, but is listed by Mr. C. C. Hanmer in his collection at East Hartford. The chief characters of the plant are a thick stem, enlarged at the base into a long, solid, scaly bulb resembling a beet; the cap appearing small at first, but gradually enlarging as maturity is reached. The flesh is white, with a strong odor of chloride of lime. This has been pronounced edible by Peck, McIlvaine, and Curtis.

AMANITOPSIS Roz.

In the genus *Amanitopsis* there are no species reported poisonous, but there is danger of mistaking some species of *Amanita* for *Amanitopsis*. *Amanitopsis* has the volva or cup at the base of the stem, but lacks the ring which is always present in *Amanita*, although in some species of *Amanita* it is so fragile that it quickly disappears, the plants at maturity therefore resembling *Amanitopsis*. The chief point for caution lies in determining whether or not a ring has been present on the stem before pronouncing any specimen an *Amanitopsis*. But one species is found in sufficient quantities to make the plants of much value for food.

***Amanitopsis vaginata* (Fr.) Roz.** (Plate II) is one of the most frequent species, and is abundant in open woods from June

until October. Occasionally it is found in open fields and pastures. It is easily identified when once its characteristics are known. The cap varies in color from gray to brown; is from two to four inches in diameter; smooth and shining in the center, with an occasional fragment of the universal veil remaining on the surface. Near the margin the flesh becomes thin, and is marked by deep furrows with prominent ridges. The stem varies in length from three to six inches, and is from one-half to three-fourths of an inch thick. It tapers slightly towards the top, and is hollow, or stuffed with a pithy substance. The volva at the base of the stem is very characteristic; being moderately firm, it persists until the maturity of the cap, as a closely sheathing cup, split down one side. This volva separates easily from the stem; and, unless care is taken in gathering, the stem may be pulled out, leaving the volva in the soil. Great precaution must be observed that no remnants of a ring are present on the upper portion of the stem. The surface of the stem is usually covered by fine scales, but these may be so minute that the stem has a peculiar mealy appearance.

LEPIOTA Fr.

In this group are found some of the best edible species. They are not likely to be confused with *Amanita*, if precaution is taken to ascertain that there are no indications of a cup at the base of the stem. While there are many species in this genus, all of which are considered edible, but three occur in sufficient quantities to merit consideration.

Lepiota procera Scop. Parasol Mushroom. (Plate III, Bull. 3.) This is one of the best-known of the edible species, and has characteristics which serve to easily distinguish it. It is commonly found in pastures during the summer and autumn months, and often occurs on lawns, in thin woods, especially chestnut sprout-lands, and frequently in gardens. It has a bell-shaped cap, more or less elevated in the center, of a gray-brown color. In age the surface of this cap becomes more or less torn into shaggy scales, with the exception of the central elevation, which remains smooth and dark brown until maturity. The brittle stem, which may be from five to twelve inches high, is clothed with numerous small scales, terminating below with a

distinct bulb; at its upper end is a stout, narrow ring, which usually moves freely up and down the stem.

This is the most frequent Connecticut species of *Lepiota*, and is usually found growing singly, or sometimes in troops.

Lepiota americana Pk. is another species which has striking characters. During August it has been abundant, growing in immense clusters on the campus at the Connecticut Agricultural College. It is found around old stumps or in soil. The caps vary in width from one to three inches, and when immature are covered with a thin skin of red-brown color. At maturity this becomes torn into numerous scales except on the more or less prominent center, and the whole plant assumes a dark red-brown color. This red color is noticeable throughout the flesh, and grows darker as the plant nears maturity, or when bruised. This is one of the chief distinguishing characteristics. The stem is shorter and thicker than in *L. procera*; and the bulbous base, so distinct in the latter species, is frequently represented in *L. americana* only by a gradual swelling. Sometimes, however, the bulbous base is well defined. The ring on the stem is less permanent than in *L. procera*, the so-called "parasol mushroom," and frequently disappears as the plant reaches maturity. It is also less distinctly movable.

Lepiota naucinoides Pk. (Plate III). Some American mycologists have doubted whether *L. naucina* Fr. and *L. naucinoides* Pk. are specifically distinct; but without discussing the question the writer will adhere to the name given in Bulletin No. 3. No harm can possibly result to the epicure, since both species are edible. This fungus is frequently very abundant in old fields, about trees which have been heavily mulched, and on open lawns. The writer has found it so abundant that a half-bushel basket could be easily gathered at one time. The plants were unusually large, many of the caps measuring eight to ten inches in diameter. In some respects the plants resemble *Agaricus campestris*, the "pasture mushroom"; but the chalky white appearance of the cap and the absence of the brown gills on mature specimens serve as distinguishing characteristics. The amateur must use much caution in collecting, not to confuse the species with white forms of *Amanita*. After the plant is once determined, the danger is very slight. The cap is nearly globular

before expanding, becoming more or less flattened with age, and is usually white and smooth. The gills are at first white, later becoming dingy with the accumulation of spores. The stem is from one to three inches long, and has a thickened base which gradually tapers upward. It is covered with minute fibers when young, but becomes smooth at maturity.

This plant is considered equal to *Agaricus campestris* in point of edibility, and some predict that its cultivation will be equally feasible. The writer has enjoyed several meals, and has found the species a delicious one.

ARMILLARIA Fr.

But one known edible species occurs in this genus, but this has a wide distribution, and has characteristics which make it well known.

Armillaria mellea Vahl. Honey-colored Mushroom. (Plate IV, Bull. No. 3.) Grows about the bases of trees, either attached directly to the stump or growing in soil. Upon close examination the mycelial strands at the base of the stem are found to be closely interwoven; and these become closely connected with the root system of the trees in the vicinity. The plants usually occur in large clusters, the individual plants of which are closely joined. The plant varies much in size, and its chief characters are its honey color, its oval to convex cap, usually covered with sharp, erect, brown scales, which may, however, entirely disappear in moist weather, and its tough, elastic stem, which is uniform in thickness throughout, and more or less covered with floccose scales. The ring, which is usually quite thick, is joined to the stem near its apex. This varies much as regards thickness, often becoming very thin or entirely disappearing with age. This plant is of considerable economic importance, since it frequently attacks fruit trees, especially those whose physiological vigor is already weakened, and serious results follow.

Armillaria mellea is far from being one of the most desirable species for food, because of its tough, leathery consistency; however, when young, it is fairly tender.

MARASMIUS Fr.

This genus contains few desirable edible species, because of the tough and leathery nature of the plants. One species, however, is soft and succulent.

Marasmius oreades Fr. Fairy-ring Mushroom. (Plate IV.) Occurs frequently in lawns. The mycelium, or vegetative part of the fungus, seems to be perennial in the soil; and, as fast as the nutritive substances in the soil become absorbed, it dies. All the while, however, new mycelial strands are sent into fresh territory, so that after a while the fruiting bodies, or caps, appear in well-defined circles. Thus the name "Fairy Ring" is given to this and to several other fungi having similar habits of growth. The plant is commonly found during the summer months, and even after heavy frosts in autumn it has been found abundantly on the campus of the Connecticut Agricultural College. The cap is usually convex, then expanded, having a more or less well-defined elevation at the summit. It varies from one to two and a half inches in diameter. The flesh is thick, but inclined to be tough and leathery. This character, however, usually disappears somewhat with cooking, and the flavor is delicious. The stem is from one to one and a half inches long, and is everywhere clothed with a downy, hairy covering.

TRICHOLOMA Fr.

While this genus contains many species, few are listed as edible. Of the Connecticut species there are six thus considered, and of these *T. personatum* and *T. sejunctum* are the most desirable. The group is characterized by having no distinct ring or cup, but the immature plants are covered with a cobwebby veil, which soon disappears and may leave a slight ring on the stem. The gills are perhaps the most characteristic feature of these plants, being more or less strongly notched as they join the stem. Sometimes this notch is inconspicuous, and disappears entirely by the splitting of the gills with age; but as a rule it is quite prominent.

Tricholoma personatum Fr. Masked Tricholoma. (Plate V, Bull. No. 3.) This is considered one of the best edible species. It grows in open woods, under trees, on lawns, and in open fields. The writer has found this species most frequently

under sugar maple trees which stand along the borders of open fields. It is distinctly an autumnal species, seldom appearing before September. The plants are most frequently found singly, they sometimes occur in groups, but are rarely clustered. They are quite regular in shape, the cap being somewhat globular, with an inrolled margin when young, becoming flattened with age. The surface of the cap is very smooth, and is never mucilaginous or viscid, even in moist weather. The whole plant is fleshy, and dingy white or violet-colored throughout. The cap varies from two to five inches in diameter. The stem is short and thick with a somewhat bulbous base. It is solid when young, becoming filled with a pithy substance when mature. The gills are compact and rounded or notched at their junction with the stem. This species is in high repute as an edible species. Peck says, "My experience leads me to place it among first-class mushrooms." While *T. personatum* resembles some few other species, it cannot be mistaken for poisonous ones, and may be eaten without fear.

Tricholoma sejunctum Sow. This plant is abundant in the chestnut woodlands of the town of Mansfield, and is frequently reported from other parts of the state. Like *T. personatum*, it is a fall species, being most abundant in September and October. Like other members of this genus, the plants are brilliantly colored; in this species shades of yellow predominate. The cap is yellow or green-yellow in color, and more or less streaked with black threads over its surface. When young the plants are distinctly viscid, and at maturity still retain this character if the weather is moist. The cap is similar in size to that of *T. personatum*, but often more irregular in shape. The stem varies from one to three inches in length and from one-half to three-fourths of an inch in thickness. It is usually white, solid within, and frequently it is quite irregular in shape. The gills differ from those of the last species by being broad, distant, distinctly notched at the stem, and easily separating from it. The flesh is white and very tender.

COLLYBIA Fr.

The genus *Collybia* furnishes a large number of edible species. They occur abundantly throughout the season, some

species appearing in early spring, others in late autumn. As far as now known, the genus contains no harmful species. A few, however, become tough and leathery at maturity, and therefore have no food value.

Collybia platyphylla Fr. (Plate VII.) Of the Connecticut species reported, this is probably the most common edible one. The cap is white or gray-brown at maturity, the center often darker than the margin. In shape it is convex when young, becoming expanded, and frequently has an uprolled margin at maturity. The stem is short and thick in comparison with the diameter of the cap. The gills are broad and distant, often becoming torn or broken with age. The flesh is white, thick, and firm, but very liable to become quickly water-soaked in moist weather. It is also very frequently infested with the larvæ of insects. It is a large, coarse plant, resembling *Pluteus cervinus*, from which it may be distinguished by its distant gills. Also belonging, as it does, to the rosy-spored group, the gills of *P. cervinus* soon assume a dull brown color due to the accumulation of spores, while the gills of *Collybia platyphylla* remain white. It occurs on logs which are nearly decayed, and about the bases of decaying stumps. The writer has found the species in Mansfield as early as May 15th, and commonly throughout the summer, until the latter part of September.

Collybia radicata Relh. (Plate VI, Bull. No. 3) is an edible species not likely to be mistaken, if when collecting special notice is taken of the character of the stem. This is long, and thickened near the surface of the soil, tapering above as it approaches the cap, and also tapering below into a long root-like strand. This latter peculiarity gives the plant its specific name. The fungus is commonly found growing in deep leaf-mold, and is abundant throughout the season. The cap is thin, from two to four inches in diameter, convex to nearly plane, and is frequently elevated in the center. It is white or fawn-colored. The flesh is white and thin. The gills are white, thick, and distant, sometimes joined to the stem by a distinct notch similar to that noticed in the description of *Tricholoma*, but frequently the gills extend down the stem by a decurrent tooth.

Collybia velutipes Curt. This plant is of economic importance, not only because of its food value, but because of its

habitat. It occurs as a frequent parasite on living trees. The mycelium gains entrance to the tree through some wound, and makes a rapid growth within the host tissue, absorbing the nutritive substances. The fungus will grow on all wood tissues, tree trunks, decaying stumps, and soil filled with decaying wood tissue. Large clusters were found in Mansfield, growing in soil where a portable saw-mill had once been. The cap varies from light to dark brown, and in size is also variable. The plant grows in dense clusters, and the caps are often crowded and distorted because of this habit of dense growth. They vary from one-half inch to two inches in diameter. Their surface is usually very moist and viscid. As in *C. radicata*, the stem is the characteristic feature of the species. It is from one to three or four inches long and about one-fourth of an inch thick. When the habitat of the plant is a stump, this stem is usually curved. Its most striking character, however, is its dense covering of brown velvety hairs. The plant is occasionally found throughout the season, but is more abundant during the fall months.

***Collybia esculenta* Wulf.** Described by Cooke as the best edible *Collybia*. It has never been collected by the writer. Mr. C. C. Hanmer of East Hartford reports the species. The plant is described by McIlvaine as—"small in size, cap one-half inch or more broad, ochraceous-clay, often becoming dusky, slightly fleshy, convex, then plane, orbicular, obtuse, smooth, even, or when old slightly striate. Flesh tough, white, savory. Stem one inch and more long, scarcely one-twelfth of an inch thick, or thread-like, and wholly equal, obsoletely tubed, tough, stiff and straight, even, smooth, slightly shining, clay-yellow, with a long perpendicular, commonly smooth, tail-like root. Gills adnexed, even decurrent, with a very thin, small tooth, then separating, very broad, limber, somewhat distant, whitish, sometimes clay-colored."

MYCENA Fr.

Like *Marasmius*, this genus contains few edible species. The small size of most of the species makes their use for food impracticable.

***Mycena galericulata* Scop.**, however, usually occurs in large numbers clustered on logs and stumps in woodlands. This is considered a desirable edible species. The cap is more or less

conical, often bell-shaped, and varies in color through the grays and browns. In size the cap is seldom over an inch in diameter. The gills are thin, with connecting veins, and are joined to the stem by a small decurrent tooth. This species is most abundant during the fall.

LACTARIUS Fr.

The writer has enjoyed more meals of the species of this genus than of any other in the group of fleshy fungi. In August, 1906, the author was to speak on "Mushrooms" at the Prospect House, Mt. Holyoke, Mass. On his arrival it was learned that the papers in near-by cities had announced that mushrooms gathered under his supervision would be served in the dining room of the hotel from August 9th to August 13th. The prospect of gathering mushrooms in sufficient quantities for from thirty to forty-five guests was almost appalling. This genus and *Cantharellus* came to the writer's aid, and furnished delicious edible fungi in sufficient quantities to meet all demands. As its name signifies, the genus is characterized by an abundance of milky juice in the tissue of the plants.

Lactarius volemus Fr. (Plate X, Bull. No. 3.) There is seldom a week in the summer months when this species is not abundant in the woods in the vicinity of Mansfield. It is seldom found in the deeper, thicker woodland, but delights in open chestnut sprout-land which has a southern exposure. The caps have an orange-brown color, quite characteristic of the species; and, when once learned, the plant is seldom mistaken. The surface of the cap is smooth, or slightly wrinkled in the center. The cap is quite symmetrical in shape, with a somewhat inrolled margin when young, becoming plane with age. Frequently the center becomes depressed, giving the cap a cup-like appearance. The flesh is white and firm, and filled with an abundance of white milk. This immediately darkens when exposed to the air, and becomes thick and stringy. In the older specimens this abundance of milk is frequently lacking. The gills are white, often tinted with the russet color of the cap, and these are quickly discolored when handled. They are usually squarely attached to the stem, but sometimes have decurrent lines running down the stem. The stem varies from one to four inches in length and from one-half

to three-fourths of an inch in thickness. It is firm and solid at first, becoming somewhat pithy at maturity. It is usually of a uniform thickness, but may taper somewhat towards the base. It is colored like the cap, although frequently it is a lighter shade of brown. This is considered by the writer the most delicious species belonging to the genus.

Lactarius corrugis Pk. is not distinct in many characters from *L. volemus*. Somewhat larger in size, the cap is of a darker shade of brown; the surface is usually more deeply corrugated, and the young specimens are covered with a close pubescence which gives the cap a velvety appearance in the sunlight. This plant has similar habitats to *L. volemus*, and the two plants have been found within a few feet of each other.

Lactarius piperatus (Scop.) Fr., Peppery Lactarius (Plate IX, Bull. No. 3), is another exceedingly common species. It grows in open woods in similar places to the other *Lactarii*. Its pure white color serves to make it a conspicuous object in the leaf-mold. Sometimes the cap does not appear above the surface, especially if the leaf-mold is thick, and the presence of the fungus is recognized only by an elevation of the leaves. The species is characterized by its pure white color, its thick fleshy cap, which becomes more and more funnel-shaped as it expands, its thick stem, and very close, narrow gills. This last feature serves to separate the species from *Lactarius deceptivus*, which it resembles. *L. deceptivus* has more distant, coarse gills. The gills in *L. piperatus* are more or less forked or divided into pairs. The milk is exceedingly acrid in young specimens. It is white and unchangeable when exposed to the air. This species is frequently gathered and eaten by the students of the Connecticut Agricultural College for their "steak and mushroom spreads." It loses its peppery character in cooking.

Lactarius deceptivus Pk. (Plate VIII, Bull. No. 3) is closely related to *L. piperatus*, from which it may be distinguished by a dense, wool-like growth of hairs along the inrolled margin of the cap, and by its coarse, distant gills. The cap varies from three to six inches in diameter, and in some cases the writer has seen specimens even eight inches across. It grows in similar localities with *L. piperatus*. The flesh is white and coarse in texture; milk white, unchangeable, with an acrid taste. The

plant is even more abundant than *L. piperatus*. It frequently becomes discolored with yellow stains, thus lacking the pure white color of *L. piperatus*.

Lactarius deliciosus (L.) Fr. is considered the most desirable of the edible species of *Lactarii*, but the writer has seldom found it in large quantities. In the vicinity of Mansfield it is usually found growing singly or in small, scattered patches. Its botanical characters are very striking. The cap varies from two to four inches in diameter; before maturity it is depressed in the center, and usually becomes deeply funnel-shaped with age. The color varies through red and yellow shades, frequently assuming a gray tint. The surface of the cap is smooth, slightly viscid, and more or less distinctly zoned. The margin of the cap is usually inrolled. The stem is quite short, from one to two inches in length; and striking features of the species are spots or pits of the same color as the cap which appear on the outside of the stem. The flesh of *L. deliciosus* is gray-white when freshly broken, becoming quickly stained with green, due to discoloration of the tissue caused by chemical changes in the milk. This milk is saffron-yellow when the flesh is first broken, but immediately changes in color.

RUSSULA Pers.

Members of this genus are viewed with suspicion by many people, while by others they are considered edible. One instance has come to the writer's attention where extreme nausea followed a meal of plants supposed to be *Russula alutacea*. It is probable that the species may have been confused with *R. emetica*, which often causes attacks of this kind. The genus contains some of the most brilliantly colored species to be found in the whole group of fleshy fungi. These colors vary much in shades of red, green, and yellow.

Russula alutacea Fr. The chief characteristics of this species are its mild taste and its yellow gills. This fungus is abundant in woodland during the summer and early fall. The cap varies from one and one-half to three inches in diameter, and is of a bright or a deep red color inclining to shades of purple. The surface is smooth in the center, but becomes ridged and uneven near the margin. It is covered with a somewhat viscid outer skin. The flesh is very white, and has the peculiar mealiness

characteristic of the genus. The gills are thick and broad and are usually connected by veins. In color they are frequently sulphur-yellow. They never lack the yellow tints.

Russula virescens (Schæff.) Fr. (Plate XVI.) This is considered the best edible species of the genus, and it is quite distinct from all the other species. The cap sometimes is bright green, but more frequently this bright color is quickly lost and the tint changes to a dingy gray. The cap is fleshy and nearly globular when young, expanding until nearly plane at maturity. The surface is smooth at first, but later becomes broken up into wart-like patches. The margin is blunt, even, and smooth, becoming torn and split with age. The flesh is white, and is mild in taste. The stem is short, smooth, white, and at first solid, but soon becomes spongy within. The whole plant is especially likely to be infested with the larvæ of insects. This whole genus seems especially liable to these insect attacks. The flavor of the uncooked flesh of *R. virescens* is considered preferable to all other species, and its crisp, mealy character recommends its use for salads.

PLEUROTUS Fr.

Most of the members of this genus are found growing on wood. As a rule, the reproductive bodies of these wood-dwelling fungi are slowly developed, and the tissue of which they are composed becomes somewhat tough and leathery. The genus contains one species, however, which is considered a great delicacy by the epicure.

Pleurotus ostreatus Jacq. (Plate XII, Bull. No. 3), if gathered before the caps are too old, is very tender and succulent. This so-called "Oyster Mushroom" receives its name, not from any flavor which resembles an oyster, but from its peculiar shape. The plant is not uncommon during the late summer and early fall on a variety of trees — elms, hickories, but more especially on dead and decaying maples. This species is especially common on street trees. The plants grow in characteristic masses, so closely joined that many of the caps become abnormally developed because of this crowded manner of growth. The individual plant is attached to the tree trunk by a very short stem, which is more or less hairy at the base. This stem is attached at one side of the cap. The cap is convex at maturity, with a smooth, moist, white

surface. This white color changes to a yellow brown. The flesh is white and firm. The gills are broad, running down the stem (decurrent), branching more or less at the base.

Pleurotus ulmarius Bull., the Elm Pleurotus, is also edible, but it is more tough and leathery than *P. ostreatus*.

HYGROPHORUS Fr.

This genus contains several edible species, and, so far as known, none have harmful properties. As the generic name signifies, the surface of the cap is always moist when young. The soft, somewhat waxy texture of the flesh of the cap and gills gives these plants distinguishing characteristics. Most of the species are small and somewhat fragile.

Hygrophorus pratensis (Pers.) Fr., the Pasture Hygrophorus, is one of the most common species. Although usually small, the flesh is thick and compact, furnishing considerable substance. The plants vary considerably in color, some being nearly white, others changing to shades of yellow and buff. When young, the cap is nearly hemispherical, but this expands to a convex form, varying considerably in shape. The gills are thick and coarse, extending down the stem (decurrent), their bases being connected by cross veins. The stem resembles the cap in color, but is usually of a lighter hue. It is thick, and as a rule tapers downward. The species is common throughout the summer in old fields, pastures, or thin woods.

Hygrophorus miniatus Fr. (Plate XVIII.) Passing through some wooded swamp or along some woodland stream, our attention may be called to a brilliant red fungus tinged with yellow, which is growing abundantly among the sphagnum moss. The writer has seen hundreds of plants growing within a small area. These are the Vermilion Hygrophorus. The cap is thin and fragile, distinctly convex when young, expanding somewhat at maturity. The surface may be smooth, but sometimes it is ridged and uneven. The gills are usually yellow, but frequently have the same reddish tints noticeable in the cap. They are not as coarse as in *H. pratensis*, and are usually attached squarely to the stem. The stem is slender and smooth, usually solid, but sometimes it becomes hollow in older specimens. It is colored like the cap.

CANTHARELLUS Adanson.

This genus contains many edible species, and is perhaps the best-known by the amateur collector. The striking colors of the plants and their blunt, branching gills make them especially conspicuous. All writers agree that they form a most desirable article of diet. The writer has observed that during comparatively dry weather the flavor is much better than during a rainy season, as there seems to be a tendency in *C. cibarius* and *C. aurantiacus* to become water-soaked and tasteless. Like many other edible species, these are also quite liable to become infested with larvæ, and need careful examination before preparation for the table. While the number of species is not large, the plants grow abundantly in rich leaf-mold in open woods.

Cantharellus cibarius Fr. (Plate XIV, Bull. No. 3.) This is considered one of the most desirable of the edible species. The cap is of a delicate yellow color, fleshy, with a thick, blunt margin, at first inrolled, then expanding at maturity, and later becoming somewhat uprolled, giving the center of the cap a sunken or vase-shaped appearance. The cap varies in diameter from two to three inches. The stem is rather short, is somewhat unequal, and frequently occurs at one side of the cap. The flesh is white, firm and solid. The gills are thick, distant, and more or less branched. They extend down the stem, and are colored like the cap. The plants may occur singly but are usually abundant within a limited range. The odor is suggestive of apricots, although in some specimens this is not noticeable.

Cantharellus aurantiacus Fr. This is similar in color to *C. cibarius*, but is very different in shape. The cap is fleshy, nearly plane when mature, and not depressed in the center like *C. cibarius*. The margin is somewhat inrolled even at maturity. The cap frequently attains a diameter of four or five inches. The gills are narrow, close, and repeatedly branched, and are colored like the cap or may be lighter. The stem has a similar color, tapers downward, and is from two to three inches in length. The flesh is firm, white, tinted with yellow. The writer has enjoyed several meals of this orange chanterelle, and has experienced no ill effects, although by some writers it is viewed with suspicion.

CLITOCYBE Fr.

From early spring until late fall some members of this genus may be found growing in leaf-mold or on fallen logs in the forests. The plants vary much in color and size. The colors range from pure white through the various shades of purple and violet, and a few are yellow. Many species have a depression in the center of the cap which gives them a more or less funnel-formed appearance. The stem is composed of rather stout fibers, so that it is not easily broken when the plants are pulled from the ground; and these fibers, extending into the cap, closely connect the two, so that the stem and cap are not easily separable as in *Lepiota*.

Clitocybe odora Bull. (Plate XVII, Bull. No. 3.) As the specific name signifies, this species is characterized by a strong odor which is not unlike the fragrance of water-lilies. It occurs abundantly throughout the season. The plants are small, the cap rarely being over two inches in diameter. It is pale green in color, with a thick, tough flesh. The gills are broad and close, similar to the cap in color. The stem is slender, shorter than the diameter of the cap, and dingy white in color.

Clitocybe laccata Scop. This is an exceedingly common species, occurring from early spring until late fall. The characteristics of the species are so striking that it is not likely to be mistaken for any non-edible species. The plant is very variable, however, in its characters, and Dr. Peck has described several varieties. The cap is thin, convex, the margin often becoming uprolled and torn at maturity, giving the plant an abnormal appearance. The surface of the cap is smooth, but sometimes it is densely covered with fine fibers. The color of the cap is usually lighter than that of the gills, the latter being often deeply tinged with purple or lavender. In moist weather the whole plant becomes more or less water-soaked. The gills frequently extend down the stem in the immature plant, but as the cap expands they are torn away from the stem and also become more or less torn otherwise. They frequently have a distinct tooth where they join the stem, and in this respect the plant resembles *Tricholoma*. The stem varies in height from one to four inches, is slender, and yellow-white in color.

CORTINARIUS Fr.

This genus is a member of the ochre-spored group, which group is easily distinguished by the red-yellow color of the gills, due to the accumulation of great masses of spores. Therefore the gills of *Cortinarius* are tinged with red or yellow, and this color deepens at maturity. In one or two species the gills are deeply blood-red in color. The chief distinguishing character of *Cortinarius* is a spider-web veil which surrounds the immature plant. As the cap expands, this veil is ruptured, leaving a more or less well-defined ring on the stem. This veil disappears at maturity, and young specimens are essential in the determination of species. Many of the plants are beautifully colored, *Cortinarius iodes* B. & C. being of an especially attractive dark violet color, curiously spotted with white. When immature the plant is very viscid, giving it a polished appearance. The number of species is large, and for the most part the species are most abundant in the autumn. During the last spring, however, *Cortinarius vernalis* was found abundantly in a grassy woodland road. Several of the most common species are considered edible.

Cortinarius violaceus (L.) Fr. (Plate XXII.) This fungus grows abundantly in the woods, and in color resembles *Tricholoma personatum*, but *C. violaceus* is usually a darker shade of violet, and has the gills rounded as they join the stem. The bulbous base of the stem also suggests *T. personatum*. The cap is convex when young, becoming nearly plane, is usually dry, and covered with fine tufts of hairs. The gills are distant and rather thick, and are colored like the cap, but become tinged with yellow-red as the spores accumulate. The stem is from three to five inches long and one-half inch or more in thickness, with a distinct bulbous base. The flesh is thick and solid, and inclined to be tough at maturity. This is considered one of the best edible species in the genus.

Cortinarius cinnamomeus (L.) Fr. (Plate XX, Bull. No. 3.) This occurs abundantly during September, and is another exceedingly attractive species; it is, however, very different in color from *C. violaceus*. *C. cinnamomeus* is characterized by shades of brown and red, the gills becoming deep blood-red at maturity. The cap varies from one to two and one-half inches in diameter. It is somewhat bell-shaped, with a distinct knot or

umbo in the center. The cap becomes expanded with age, until it is somewhat flattened. It is covered with a dense coat of fine fibrils. The flesh is thin, and of a similar color to the surface of the cap. The somewhat crowded gills are joined squarely to the stem. They are yellow at first, but are dark red at maturity. The stem is from two to four inches long, and about one-half inch in diameter, equal throughout, and is hollow, and colored like the cap.

Other species listed as edible are *C. collinitus* (Pers.) Fr., a plant yellow-brown in color, abundantly smeared over with a glutinous substance, especially in moist weather; and *C. armillatus* Fr., characterized by a distinct ring on the stem; both of which were found frequently in Mansfield during the season of 1906.

PHOLIOTA Fr.

The plants of this genus are similar to *Cortinarius* in the color of the spores. They also have the veil, but, unlike the spider-web veil of *Cortinarius*, this is thick and persistent. In the character of the ring they are similar to *Armillaria*, of the white-spored group. They are, however, quite distinct in other characters. Many of the *Pholiotas* grow on the trunks of trees. Frequently fungi having this habitat possess a peculiar bitter flavor. The *Pholiotas* are no exception to the rule, and, while some wood-growing species are delicious, others are too bitter to be eaten.

Pholiota praecox Pers. is one of the first edible mushrooms of the spring months. The writer has found it abundantly growing on lawns during the month of May. It continues abundant throughout the season. The cap is convex, white or cream-colored, becoming yellow with age. During wet weather the surface of the cap is slightly sticky, but when dry this character quickly disappears. The margin of the cap is at first inrolled and connected with the stem by a rather thick veil. This ruptures as the cap expands. The cap is seldom over two inches in diameter. The stem is long and slender, stuffed when young, but becomes hollow with age. The crowded gills are squarely attached to the stem, sometimes slightly extending down it (decurrent). They are white at first, then become yellow. The plants are small and delicate but usually occur abundantly.

Pholiota caperata Pers. (Plate XXIII.) Another species of this genus which is found growing on the ground is *P. caperata*. During the season of 1906 it was especially abundant in Mansfield, growing in open chestnut woodland. The cap is large, often five inches in diameter. It is yellow in color, and often roughened on the surface with ridges and pits. The flesh is thick and firm. The gills are thin, crowded, and somewhat saw-toothed on the margins.

Pholiota squarrosoides Pk. (Plate XXI, Bull. No. 3.) This is one of the most delicious of the edible fleshy fungi. It grows in large clusters on dead stumps, especially those of maple trees. The caps are convex, quite viscid when moist, and covered with dense scales scattered over the surface. As the caps mature, these scales separate somewhat, thus showing the white surface of the cap beneath. This gives the cap its peculiarly mottled appearance. The gills are close and compact, white at first, becoming cinnamon-colored with age. The stem is somewhat stout and densely covered with thick, white scales. These change, as the plants mature, to a dull yellow-brown color.

PLUTEUS Fr.

This genus belongs to the rosy-spored group, therefore the gills of fresh specimens soon assume a pink color, due to the accumulation of these spores. These plants are usually found growing on decaying tree trunks or other woody substances.

Pluteus cervinus Schaeff. (Plate XXV; Plate XXIII, Bull. No. 3.) This species is one of the most common members of the genus, and is one of the few edible species in the rosy-spored group. It is usually found in the woods growing singly, from early spring until late frost, but nowhere has the writer found it so abundant as along a wood road which has been heavily coated with sawdust. There was hardly a day throughout the entire season when a good supply of fresh plants could not be gathered; and mushrooms from this source not only supplied several of the families living on the campus of the Connecticut Agricultural College, but also furnished material for many "mushroom spreads" prepared by the students. One mushroom enthusiast took a large quantity of the sawdust and stored it in his cellar, that he might have a supply of fresh mushrooms throughout the winter.

Those which grow where there is an abundance of plant food are in large clusters; a single cluster frequently filling a four-quart measure. The cap is bell-shaped, becoming expanded with age, until it is nearly flat. Frequently the edges roll up at maturity, and when in clusters the cap becomes misshapen because of the density of growth. The color of the cap varies considerably. Frequently it is gray-brown or fawn-color, but often of a dark brown. The surface of the cap may be smooth or densely covered with fine fibrils. The whole plant resembles closely *Collybia platyphylla*, but lacks its general coarseness. The gills especially distinguish the two species. *Pluteus cervinus* has the gills close yet not crowded, broad, and free from the stem; these are at first white, then flesh-colored. The stem is symmetrical or slightly tapering upward; it is firm, solid, and either quite smooth or covered with fine fibrils similar to those of the cap. The color of the stem also varies with the color of the cap. The interior of the stem is filled with fine fibers which differ in substance from the flesh of the cap, therefore the two are easily separable.

CLITOPILUS Fr.

This genus resembles in many of its characteristics *Clitocybe* of the white-spored group. Most of the species are earth-growing; and, so far as now known, none of the species are harmful. Care must be taken, however, to distinguish the species from *Entoloma* of this same rosy-spored group. In *Entoloma* the gills have a distinct tooth where they join the stem (sinuate), while in *Clitopilus* the gills are joined squarely to the stem or extend down it in decurrent lines.

Clitopilus orcella Bull. The best edible species in this genus is *C. orcella*. It is also one of the most abundant fungi, growing commonly in open woods and grassy pastures throughout the summer months. The cap is often irregular in shape, is very fleshy, soft, plane or slightly depressed. It is white or yellow-white in color, slightly sticky or viscid when moist, becoming silky when dry. The flesh is solid, thick, white, and has a strong farinaceous odor and taste. The gills are close, decurrent, running down the stem, at first white, then flesh-colored. The stem is short, thick, solid, colored like the cap, somewhat thickened above, and is often at one side of the center (eccentric).

AGARICUS Linn.

Probably no genus is better known than *Agaricus*, because of its commercial importance. Fortunately the so-called "field mushroom" is not easily mistaken for other species, because of its striking characters.

Agaricus campestris Linn. (Plate XXIV, Bull. No. 3.) This species is frequently found in open fields and pastures during August and September. The writer has found that in pastures the plants can rarely be gathered, as they seem to be much sought for by the cattle.

Agaricus campestris has many varieties, but these are not strongly distinct, so that they are not usually distinguished by the amateur collector. This is the species which is much cultivated. Quite frequently it is found in greenhouses, growing in carnation beds or in lettuce beds, sending up abundant crops of "buttons" from time to time. The cap is at first hemispherical or convex, then expanding until at maturity it becomes nearly or quite plane. The margin is incurved, and joined to the stem by a partial veil, which on rupturing leaves a more or less well-developed ring on the stem. This ring is near the middle of the stem, and frequently disappears entirely as the plant matures. On other specimens it may be quite persistent. The surface of the cap is usually covered with fine, white, hair-like scales, and these with the outer layer of fungus threads separate easily from the flesh, so that the cap may be readily peeled. Frequently it is said that this is the criterion of an edible mushroom, but the test cannot be depended upon in all species. In color the cap is silvery white. The gills are close, and at first are a delicate pink, but this color soon changes as the plants mature until they assume a deep brown color. The stem is nearly equal throughout its length, but is sometimes thickened near the base; it varies in length from one and one-half to three inches, but is usually quite short. Within, it is stuffed with many fibers.

The following varieties are described in McIlvaine's "One Thousand American Fungi":

Var. *albus* Berk.—"A very common wild form."

Var. *griseus* Pk.—"Cap grayish, silky, shining."

Var. *praticola* Vitt.—"Meadow variety. Cap with reddish scales."

Var. *umbrinus* Vitt.—“Dark brown, stem short, minutely scaly.”

Var. *rufescens* Berk.—“Cap reddish, minutely scaly. Flesh turning bright red when bruised or cut.”

Var. *villaticus* Brond.—“Cap scaly; stem scaly.”

Var. *hortensis* Cke.—“Cap brownish or yellow-brown. Cultivated.”

Var. *Buchanni* —“Cap depressed in center.”

Var. *elongatus* —“Long-stemmed variety.”

Var. *vaporarius* Vitt.—“Greenhouse variety.”

McIlvaine also says: “The *Agaricus campestris* is known the world over as the common mushroom. It is cosmopolitan, appearing in pastures and rich places, from spring and until long after severe frosts. It is the sweet morsel of gourmets. Indirectly it has done more damage than the viciousness of all other toadstools. It is by mistaking the young button forms of the deadly *Amanita* for the button forms of the common mushroom, that most cases of fatal mushroom poisoning are brought about. It is, also, usually the persons who think they know the mushroom and cannot be deceived, that get poisoned. If two rules are observed, danger can be avoided. (1) Never eat a fungus gathered in the woods believing it to be the mushroom. The typical *A. campestris* does not grow in the woods; species of *Agaricus* somewhat resembling it do. (2) Look at the gills; those of the mushroom are at first a light pink, which rapidly, as the plant matures, darkens to a dark brown, purplish-brown, or purplish-black. This is due to the ripening of the spores. Those of *Amanita* are constantly white.”

HYPHOLOMA Fr.

This genus contains many edible species. The spores are similar in color to those of *Agaricus*, but the plants are easily distinguished. In rupturing, the universal veil does not leave a well-defined ring on the stem as it does in *Agaricus*, but the remnants of the veil remain attached to the margin of the cap, in many instances forming an appendiculate margin. In some instances young specimens show the ring quite distinctly, but all indications of it soon disappear.

In *Agaricus*, the cap easily separates from the stem, the substance of the flesh being different in texture, but in *Hypholoma*

the substance is the same throughout, therefore the stem and cap do not easily separate. The plants are more commonly found in the fall, but some species occur during the summer months.

Hypholoma appendiculatum Bull. (Plate XXVII.) This is a common species, and grows in great abundance on the lawns of the Connecticut Agricultural College during July and August. The mycelium seems to be perennial, for the plants have appeared in the same spots several years. It is one of the best edible kinds; the caps are very tender and are excellent in flavor. These plants grow in thick clusters on the ground or on decaying logs, and often cover a considerable area. The cap varies from one to three inches in diameter, and also varies in color from dingy white through various shades of brown and yellow. It is fleshy and membranous, becoming thin and leathery when dry. The cap is ovate at first, then expands with age. The margin of the young cap is fringed with the remains of the veil, but this disappears as the plants reach maturity. The stem is from two to three inches long and from one-twelfth to one-sixth of an inch thick. It is delicate, shredding into fibers when broken. The crowded gills are joined squarely to the stem, are at first white, then pink, and lastly dingy brown. The plant is a safe one to gather for food, for there is nothing with which it is likely to be confused. ✓

Hypholoma sublateralitium Schaeff. Brick-topped *Hypholoma*. (Plate XXV, Bull. No. 3.) This species is more frequent during the fall months than in summer. During the autumn of 1906 the writer found an immense number even after severe frosts. The plants are commonly found on decaying stumps, and always grow on decaying wood. During the last year the writer found an immense number of the plants apparently growing on the ground. Suspecting, from the peculiar radiating manner in which they grew, that they were attached to a tree stump, he found by careful examination that a stump had been dug out and the plants were growing from the larger roots which remained in the ground. The caps vary from two to four inches in diameter, and are of a yellow-red color, darker in the center and with pale margins. Frequently the plants are so densely clustered that the caps are abnormally developed. The plants are quite fleshy; the flesh being white

at first, becoming yellow with age. The stem varies in length, but is usually about three inches long. When growing from the side of stumps, it becomes variously curved. The gills are squarely jointed to the stem, and are more or less crowded. At first they are a green-yellow in color, but become dingy brown at maturity. The veil is often present on the young plants. These plants have long been considered edible, and the writer has eaten them frequently. However, when he was in Dr. Peck's laboratory a year ago, Dr. Peck called his attention to a letter he had just received, stating that two ladies had been taken ill after eating plants like the specimens sent. These plants were without doubt *Hypholoma sublateritium*, and from the symptoms it was suspected that the illness was caused by indigestion which followed a hearty meal of this fungus.

COPRINUS Pers.

This genus has but few species, so far as now known, and these are quite characteristic. Belonging, as it does, to the black-spored group, the gills are quickly coated with an abundance of jet-black spores. The gills are membranous at first, but quickly deliquesce into a fluid which becomes black because of the abundance of spores. The plants are commonly found on lawns, in flower beds, or on decaying stumps. They spring up very quickly during the night, and the sun's rays cause them to disappear. The plants vary much in size, some being very fragile, others firmer. Their delicate texture makes them all the more desirable for food.

Coprinus comatus Fr. Shaggy Mane. (Plate XXVI, Bull. No. 3.) The large, distinct, "shaggy" appearance of the cap of this species makes it especially noticeable. It is more abundant in late summer, but is occasionally found in June and July. The cap is larger, and the flesh is firmer in substance, than in other species of this genus. The cap is at first bell-shaped, expanding as it matures, until the margin finally becomes uprolled and more or less torn and split. The gills are very broad; white at first, they soon become tinged with pink, and finally become deep purple and dissolve into an ink-like substance. The stems are occasionally ten inches long and over a half-inch thick, but these are on plants growing in exceptionally rich soil. Ordinarily the

plants are smaller. The stems are hollow, and the ring is quite firm and occurs near the base of the stem. Atkinson, in his "Studies of American Fungi," gives an excellent and thorough description of this species, with splendid illustrations of the plants in all stages of their development.

Coprinus atramentarius (Bull.) Fr. Ink-cap. This plant is similar in its habitat to *C. comatus*, and sometimes the plants may be found growing side by side. The writer has found both along a shaded bank where ashes had been dumped. They also occur abundantly on very rotten stumps. The caps of this species are smaller and shorter than those of the shaggy mane, and they are usually entirely smooth, but are covered sometimes with delicate white fibrils or coarser scales. The surface of the cap is distinctly marked with fine lines which radiate from the center to the margin. The ring in this species is quite fragile and disappears quickly after the margin of the cap separates from the stem.

Coprinus micaceus (Bull.) Fr. Glistening Coprinus. (Plate XXVIII.) The cap of this fungus is coated with minute scales which glisten in the sunlight like particles of mica. The plant is found frequently during the spring and early summer around bases of trees or decayed stumps on lawns. It is seldom found as an isolated specimen, but grows in dense groups. In matured plants, the cap seldom has a diameter of over an inch and a half. In substance the cap and gills are much thinner than those of either the shaggy mane or the ink-cap. During a dry season the plants retain rather a firm texture, but in moist weather it shows the same character of quickly dissolving into an inky substance that is shown by other members of the family. The writer has gathered and eaten large quantities of this species, and has found the quality superior to any others of the family.

Part III

List of Species of Fleshy and Woody Fungi Reported since July, 1905

AGARICACEÆ Fries.

AMANITA Pers.

- Amanita abrupta** Pk. (abrupt).
Mansfield, July (479).*
- Amanita cothurnata** Atk. (booted).
Mansfield, July (378).
- Amanita flavo-rubescens** Atk. (reddish-yellow).
South Windsor, *Hanmer*.
- Amanita Frostiana** Pk., var. *pallida* Pk. (pale).
Redding, *Earle* (1111).
- Amanita mappa** Fr. (*mappa*, a napkin).
Mansfield, July (376).
- Amanita solitaria** Bull. (growing alone).
East Hartford, *Hanmer*; Redding, *Earle* (1046).
- Amanita spreata** Pk. (despised).
Mansfield, July, *Dr. C. Thom*.

AMANITOPSIS Roz.

- Amanitopsis lepidota** Earle (scaly).
Redding, *Earle* (926).

TRICHOLOMA Fr.

- Tricholoma saponaceum** Fr. (soapy).
Danielson, *Miss E. B. Scarborough*.

COLLYBIA Fr.

- Collybia tuberosa** Bull. (tuberous).
Mansfield, Aug. (390).

MYCENA Fr.

- Mycena sub-incarnata** Pk. (almost flesh-colored).
Mansfield, Aug. (440).

* Numbers in parentheses accompanying notices of plants collected in Mansfield refer to the numbers of specimens in the herbarium of fungi in Connecticut Agricultural College; those accompanying notices of plants collected by Earle refer to the numbers of specimens in the herbarium of fungi at Bronx Park.

Mycena lesiana Berk. (Lea).
Mansfield, Aug. (470).

LACTARIUS Fr.

Lactarius involutus Sop. (inrolled).
Rainbow, *Hanmer*.

RUSSULA Pers.

Russula aeruginescens Pk. (*arugo*, rust of copper).
Redding, *Earle* (1211).

Russula albella Pk. (whitish).
Redding, *Earle* (1207).

Russula alutacea Fr. (leathery).
Mansfield, Aug. (443).

Russula decolorans Fr. (*decoloro*, to deprive of the natural color).

Redding, *Earle* (537, 1019); Mansfield, Aug. (470).

Russula fragilis Fr. (fragile).
Redding, *Earle* (670).

Russula integra Fr. (entire).
Redding, *Earle* (412).

Russula Mariae Pk.
Redding, *Earle* (347).

Russula nigricans Bull. (blackish).
Rainbow, *Hanmer*.

Russula olivacea Fr. (olivaceous).
Redding, *Earle* (418).

Russula pectinata Fr. (*pecten*, a comb).
Redding, *Earle* (349).

Russula rosacea Fr. (*rosa*, a rose).
Redding, *Earle* (1390).

PLEUROTUS Fr.

Pleurotus dryinus Pers. (*δρῦς*, oak).
Rainbow, *Hanmer*.

HYGROPHORUS Fr.

Hygrophorus chrysodon Fr. (golden-toothed).
Rainbow, *Hanmer*.

CANTHARELLUS Adanson.

Cantharellus aurantiacus Fr. (orange-yellow).

East Hartford, *Hanmer*; Mansfield, Aug. (427).

OMPHALIA Fr.

Omphalia campanella Balsch, var. *sparsa* Pk. (scattered).

East Hartford, *Hanmer*.

Omphalia scabriuscula Pk. (somewhat rough).

Mansfield, June (52).*

CLITOCYBE Fr.

Clitocybe adirondackensis Pk.

East Hartford, *Hanmer*.

LENTINUS Fr.

Lentinus cochleatus Fr. (*cochlea*, a snail-shell).

Mansfield, Aug. (430).

Lentinus ursinus Fr. (*ursus*, a bear).

Mansfield, Aug. (471).

INOCYBE Fr.

Inocybe floccosa Berk. (*floccus*, a lock of wool).

Redding, *Earle* (1034).

Inocybe rimosa Bull. (*rima*, a crack).

Redding, *Earle* (370, 653).

FLAMMULA Fr.

Flammula polychroa Berk. (many-colored).

East Hartford, *Hanmer*.

PLUTEUS Fr.

Pluteus granularis Pk. (sprinkled with grains).

Mansfield, Aug. (472).

Pluteus salicinus Pers. (*salix*, willow).

Mansfield, Aug. (433).

Pluteus longistriatus Pk. (marked with long striae).

Redding, *Earle* (524).

Pluteus tomentosulus Pk. (somewhat woolly).

Mansfield, Aug. (475).

* See note on page 22.

CORTINARIUS Fr.

Cortinarius flavifolius Pk. (yellow-leaved).

Ledyard, *Hanmer*.

Cortinarius obliquus Pk. (oblique).

Ledyard, *Hanmer*.

Cortinarius torvus Fr. (savage).

East Hartford, South Windsor, *Hanmer*.

Cortinarius vernalis Pk. (*ver*, spring).

Mansfield, May (443).

PHOLIOTA Fr.

Pholiota adiposa Fr. (*adeps*, fat).

East Hartford, South Windsor, *Hanmer*.

CLITOPILUS Fr.

Clitopilus prunulus Scop. (*prunus*, plum).

Redding, *Earle* (1164).

AGARICUS Linn.

Agaricus campestris L. (*campus*, a field), var. *praticola* Vitt.
(inhabitant of meadows).

Mansfield, July (441).

Agaricus campestris, var. *hortensis* Cke. (belonging to a garden).

Greenhouse, East Hartford, *Hanmer*.

Agaricus campestris, var. *villaticus* Brond. (*villa*, a farmhouse).

New Britain, *Hanmer*.

HYPHOLOMA Fr.

Hypholoma subaquilum Banning (somewhat dark-colored).

Mansfield, Sept. (448).

Hypholoma hymenoccephalum Pk. (*ὑμήν*, membrane; *κεφαλή*, head).

South Windsor, *Hanmer*.

POLYPORACEAE Fr.

POLYPORUS Fr.

Polyporus Spraguei B. & C.

Bolton, *Hanmer*.

Polyporus perplexus Pk. (confused).

East Hartford, *Hanmer*.

Polyporus poripes Fr. (having a porous stem).

Warehouse Point, *Hanmer*.

Polyporus arcularius (Batsch) Fr. (*arcularius*, one who makes little boxes).

East Hartford, *Hanmer*.

Polyporus fissus Berk. (cleft).

Manchester, *Hanmer*.

Polyporus fumosus Fr. (smoky).

South Windsor, *Hanmer*.

MUCRONOPORUS.

Mucronoporus Everhartii Ell. & Gal. *Pyropolyporus Everhartii* Ell. & Gal.

HYDNACEAE Fr.

PHLEBIA Fr.

Phlebia radiata Fr. (*radius*, a spoke or ray).

East Hartford, *Hanmer*.

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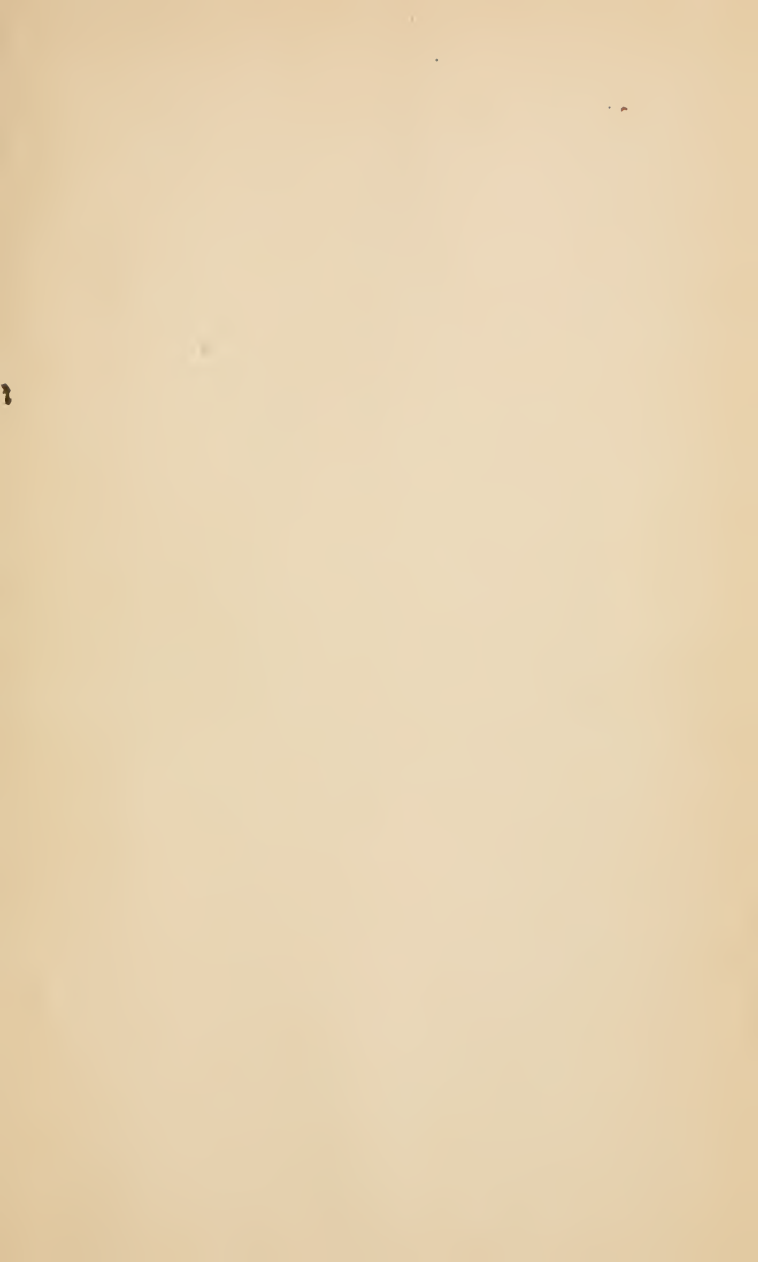
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